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ABSTRACT

This publication deals with two broad issues: (1) selection, equality, and reproduction of social hierarchies in higher education, and (2) development policies and the assessment of their effect on higher education. It contains the following 10 papers: "Ambitious Goals--Small Changes? On the Structure of Student Population in Finland in the 20th Century" (Arto Nevala); "Selection of Matriculated Students into Further Studies" (Hannu Jalkanen); "Distinction Strategies and Selection in the Finnish Academic Field" (Juha-Pekka Liljander); "Higher Education as a Field" (Sakari Ahola); "Research Process as a Paradigm for Teaching and Learning--Experiences during Seminar Instruction" (Pentti Hakkarainen, Kari Kuutti); "Faculty Cultures and Innovations--A Case Study" (Jussi Valimaa); "Strategy and Implementation of Change in the University Management: The University of Joensuu, Finland" (Seppo Holtta); "From Central Planning to Decentralization? Accountability in Higher Education" (Leena Koski); "Study Careers and Productivity" (Pentti Maatta, Sakari Valkonen); and "Approaches and Assessment Models in University Teaching and Learning" (Pentti Hakkarainen). (GLR)

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Theory into practice 75

Pentti Hakkarainen – Hannu Jalkanen –
Pentti Määttä (eds.)

CURRENT VISIONS AND ANALYSES ON FINNISH HIGHER EDUCATION SYSTEM

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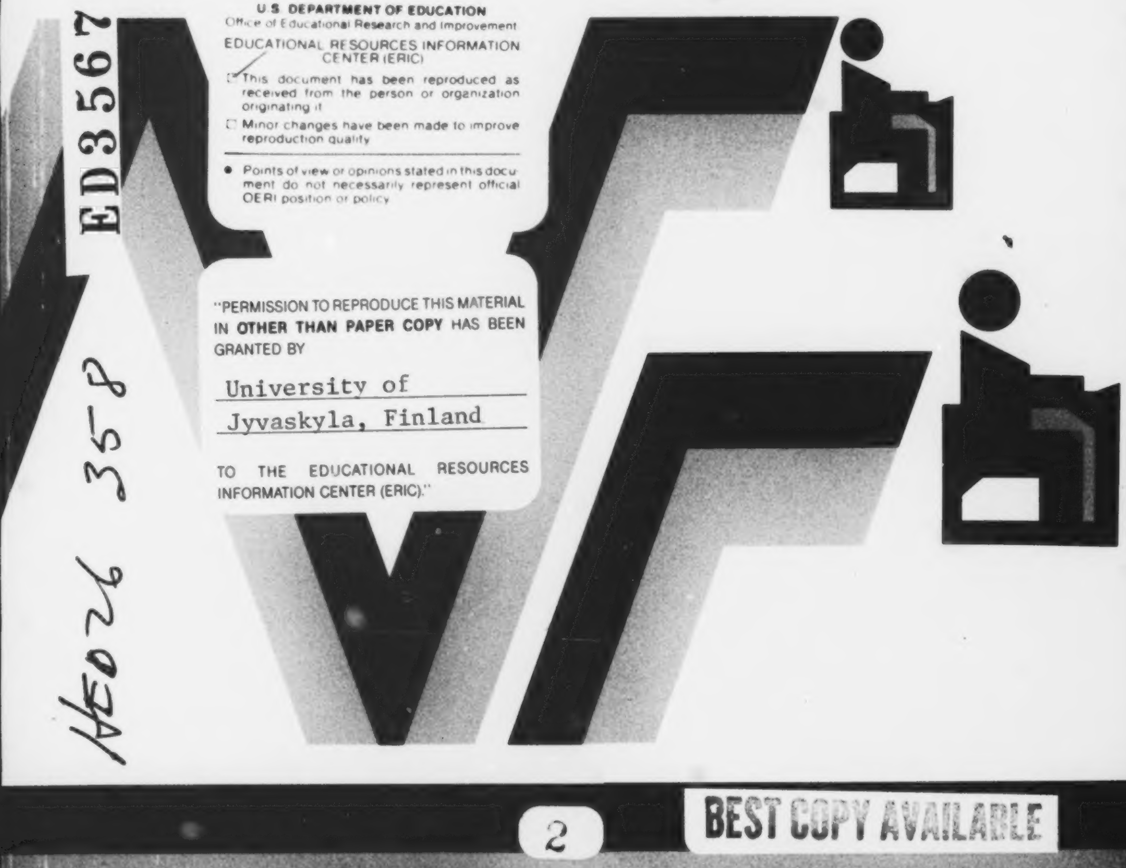

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Abstract

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Descriptors: higher education, selection, faculty culture, assessment, accountability

Contributors

S. Ahola, University of Turku, Research Unit for the Sociology of Education, Hämeenkatu 1, 20500 Turku

P. Hakkarainen, University of Jyväskylä, Institute for Educational Research, P.O. Box 35, 40351 Jyväskylä

S. Hölttä, University of Joensuu, Administrative Department, P.O. Box 111, 80101 Joensuu

H. Jalkanen, University of Jyväskylä, Institute for Educational Research, P.O. Box 35, 40351 Jyväskylä

L. Koski, University of Joensuu, Institute of Education and Sociology, P.O. Box 111, 80101 Joensuu

K. Kuutti, University of Oulu, Department of Computer Science, P.O. Box 400, 90571 Oulu

J.-P. Liljander, University of Jyväskylä, Institute for Educational Research, P.O. Box 35, 40351 Jyväskylä

P. Määttä, University of Jyväskylä, Institute for Educational Research, P.O. Box 35, 40351 Jyväskylä

A. Nevala, University of Joensuu, Department of History, P.O. Box 111, 80101 Joensuu

S. Valkonen, University of Jyväskylä, Institute for Educational Research, P.O. Box 35, 40351 Jyväskylä

J. Välimaa, University of Jyväskylä, Institute for Educational Research, P.O. Box 35, 40351 Jyväskylä

Foreword

This collection of articles deals with two broad issues in the field of Finnish higher education. First is the always acute controversy of selection, equality, and reproduction of social hierachies, or, in other words, struggle for status and positions in education. The second is the recent development policies and the assessment of their effect on higher education. In part they have been motivated by accountability, the principle of funding by results, which will be fully introduced in university administration in 1994.

The selection of these themes is easy to understand when we consider the history of the Finnish higher education system. The structural reforms carried out in the last few decades invite to do research on the efficiency of the system and on the effects of the reforms. On the other hand, structural reforms - e.g. enlargement of system, reform of degrees, or decentralization of administration - do not per se alter the contents of higher education and the process of studying. Accurate evaluation forms the critical reflexion-point for (future) reforms.

In the first part of the collection, in the sociologically oriented articles, the Finnish higher education is examined as a field more or less in the Bourdieuan meaning. We begin with an article which depicts the structure of the student body as well as the changes of that structure. Then the application process which produces this structure is described. In the third article the picture of higher education as an instrument for social selection is deepened by examining the processes of cultural reproduction inside the university. Lastly, the structuration of the Finnish higher eduction as a field is analysed. Especially the two last mentioned articles try to apply the Bourdieuan theory to our Finnish reality.

Articles in the second part of the collection describe and assess steps taken to improve the quality of the Finnish higher education. The starting points for these articles are some recent experiments in teaching or the organization of teaching and administration, all of which have, at different levels, aimed at the improvement of the functioning of higher education. Common to these articles is that they all somehow deal with the cultural action patterns although the issues and problems as well as data and theories referred to are quite varied. The beginning article examines results of an experiment in which simulation of the research process was applied in teaching a course. Then faculty cultures in various fields are compared, based on the experiences from the re-organization of instruction. Thirdly, the process of administrative change in a whole university is analysed.

The assessment perspective - though present in all articles - is further emphasized in the articles of the third part of the collection. These articles analyse and criticize, from different perspectives, empirical data used in evaluation, the methodology of assessment or the ideology of accountability. In other words, the suitability of accountability in the academic world is questioned even if the need for and significance of evaluation, particularly self-evaluation, of action is not denied.

Liisa Havola checked the language of Välimaa's article. Paula Bertell translated the rest of the articles and Sauli Takala checked the language. Sanna Honkimäki and Kaija Mannström have typed different versions of this collection.

Jyväskylä 31st August 1992

Pentti Hakkarainen
Hannu Jalkanen
Pentti Määttä

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PART I

REPRODUCTION OF THE SYSTEM

Ambitious Goals - Small Changes?
On the Structure of the Student Population in Finland in the 20th Century

Arto Nevala

1. Introduction

In this article an attempt is made to give an overall view of the student population enrolled at Finnish universities in the 20th century. Especially changes in the students' regional and social background are described. It is expressly an overall view and no detailed discussion that is aimed at. The structure of the student population is investigated every fifth year on the basis of cross-sectional cohort data - some information was available for other years too but, unfortunately, there are also longer gaps in information. This is largely a statistical study although there is no comprehensive statistical data covering the whole period of time. In addition to official published statistics, data had to be collected from unpublished basic sources, and information in various registers and data bases had to be combined. (Nevala, 1991)

The profile of selection into universities has changed profoundly during this century as can be seen in Figure 1. During the parallel school system the majority of the age group "dropped off" in a way when part of the age group entered the junior secondary school. In other words the most significant selection took place before the end of compulsory education. Until the 1960's most of those who entered senior secondary school also graduated and continued their studies at a university as the competition for study places was not so hard at that time. The system of selection became more common at universities immediately after World War II but as the amount of applicants was not significantly higher than the amount of starting places, the effect of selection remained slight. Later on, the increasing number of senior secondary school graduates made it necessary to limit the entrance into higher education (the numerus clausus system) so that at the beginning of the 1960's there were entrance examinations in nearly all the study lines. At the University of Helsinki the last one unit to select the students was the Faculty of Political Science as it started to limit the number of students in the autumn of 1962. The fact that intake limitations became more common indicates at the same time that the main point of selection shifted to the gates of universities as can be seen in Figure 1.

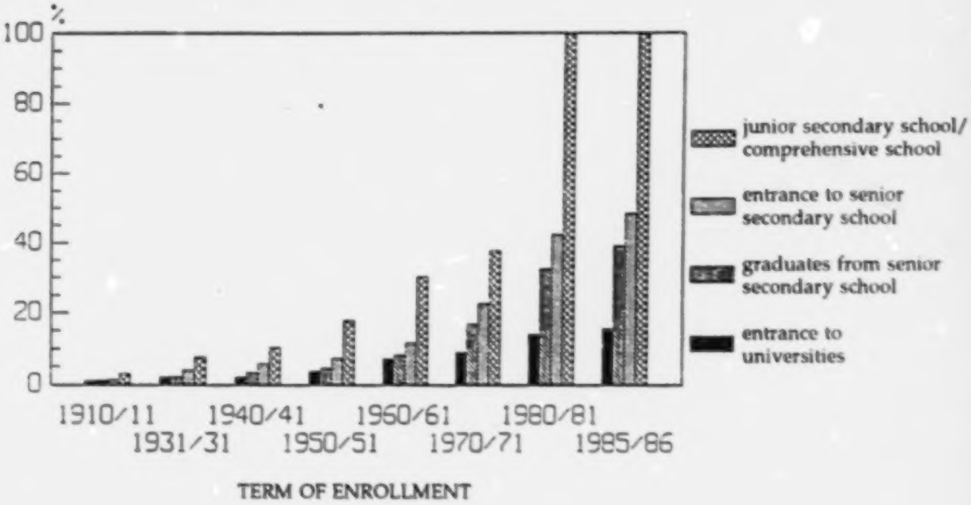

Figure 1. *Selection of age cohort into educational ladders (size of age group = 100%)*

2. Changes in Distribution of Universities and Faculties

At the beginning of this century the University of Helsinki was the only institution offering higher education in Finland. By the outbreak of World War II, however, Finland had a university system with nine higher education institutions in three cities. The contrast compared with the situation at the turn of the century was significant as even the amount of students had quadrupled (from 2318 to 9410). Nevertheless, the actual expansion of higher education is usually associated with the period ranging from the late 1950's till the 1970's. During that time higher education expanded regionally to cover the whole country as altogether seven new higher education institutions opened their doors in cities with no previous university education (see the appendix). The growth of the amount of students was also rapid - in two and a half decades the number of students quadrupled again and the magic limit of 100.000 university students was broken at the end of the 1980's.

The increasing number of higher education institutions and their regional decentralization have, of course, affected the student flows in a totally new way, as can be seen in Table 1.

The leading position of the University of Helsinki was gradually crumbling already before World War II but the real shift took place not until from the late 1960's. At that time the amount of students started to rise quickly especially at the Universities of Turku and Jyväskylä that had been leading quiet lives for long as well as at the College of Social Sciences (University of Tampere) that had been moved to Tampere and also at the University of Oulu. On the following surge during the 1970's and 1980's it was the turn of the so-called new institutions of higher education to stabilize their shares of the student intake. They came largely too late to be able to help accomodate the "student boom" during the 1960's although the predicted growth of the amount of senior secondary school graduates was one of the main arguments for the necessity of new universities.

Table 1. *Enrollment of new students at Finnish higher education institutions 1900-1985 (%).*

	1900-19	1920-34	1938	1945-50	1951-60	1961-70	1971-80	1981-85
UH	84	69	68	66	58	42	26	24
HUT	12	11	11	13	11	7	7	8
HSE	2	6	6	6	7	6	4	3
SSEH	2	3	4	3	3	2	2	2
SUT		6	3	3	3	4	4	5
UTu		5	2	5	11	11	11	10
UTa		0	0	1	2	9	11	10
SSET		0	2	1	1	1	1	*
UJy		0	4	0	2	8	9	9
CVM				1	1	0	0	0
TSE				1	1	2	2	2
UO					0	6	9	8
TUT						1	3	4
UV						1	2	2
UJo						0	5	6
LUT						0	2	2
UK							1	3
UL							1	2
Total %	100	100	100	100	100	100	100	100

UH = University of Helsinki, HUT = Helsinki University of Technology, HSE = Helsinki School of Economics, SSEH = Swedish School of Economics in Helsinki, SUT = Swedish University of Turku, UTu = University of Turku, UTa = University of Tampere, SSET = Swedish School of Economics in Turku, UJy = University of Jyväskylä, CVM = College of Veterinary Medicine, TSE = Turku School of Economics, UO = University of Oulu, TUT = Tampere University of Technology, UV = University of Vaasa, UJo = University of Joensuu, LUT = Lappeenranta University of Technology, UK = University of Kuopio, UL = University of Lapland

* incorporated into SUT

Also the relative sizes of various faculties have thoroughly changed in eight and a half decades. To take an example, at the turn of the century the University of Helsinki, the only one in the country, admitted students to only five faculties. In the middle of the 1980's, the student could choose between 16 different faculties. Table 2 shows the variations in enrollment in different faculties.

Table 2. *Enrollment of new students in various faculties at Finnish higher education institutions 1905-1985 (%).*

	1905	1925-26	1935-36	1945-50	1951-60	1961-70	1971-80	1981-85
Theology	6	5	7	2	3	2	2	2
Law	17	19	20	10	4	4	4	4
Social sciences		0	0	9	10	11	7	9
Humanities and art	36	27	17	27	36	29	17	18
Mathematics and natural sciences	37	22	17	15	14	18	17	15
Education*			0	0	0	1	13	14
Physical education		1	1	1	1	1	1	1
Medicine		1	0	5	5	4	6	6
Agriculture and forestry	4	5	12	6	3	2	2	2
Technology		11	12	14	11	10	14	16
Economics		9	14	11	13	15	14	12
Other						3	3	1
Total %	100	100	100	100	100	100	100	100

* Including teacher training colleges which were transferred to universities at the beginning of the 1970's.

It was typical of the decades before World War II that there were great variations in the size of the faculties. At the beginning of the century, over two thirds of new students enrolled at the Faculty of Humanities and Arts as well as at the Faculty of Mathematics and Natural Sciences. This phenomenon can be explained by the powerful expansion of the grammar school system at the same time as it underwent a transition from Swedish to Finnish. Both of these factors increased the demand for competent teachers. At the beginning of the century approx. one fifth of the students enrolled at the Faculty of Law because a degree in law was an advantage in applying for jobs in civil service in the new independent republic. By World War II the size of various faculties became more even as especially technical and economic education grew stronger - also interest in agriculture and forestry increased since admission was still at that time unlimited. At the same time the worst shortage of teachers in grammar schools was overcome and the Faculty of Humanities and Arts as well as the Faculty of Mathematics and Natural Sciences lost some of their previous popularity.

The more we approach the present day, the more stable the sizes of the various faculties become. Note, however, that teacher training colleges were incorporated into universities during the 1970's, and this can be seen in the percentages of Table 2. As the starting places especially in faculties of humanities and arts were reduced at the same time, it is possible that part of the students who earlier would have enrolled at faculties of humanities and arts now choose education - and class teacher education in particular - as their main subject. The background of students enrolled in these fields is largely similar - the students come from middle class families outside southern Finland.

The stabilization of student flows is a result of the centralization of decision-making and planning in higher education policy. As a matter of fact, the enrollment rates of various fields have been roughly determined from the middle of the 1960's in higher education development plans to match the needs of the labour market. Furthermore, entrance examinations had become common in almost every discipline even before this. Thus, there will hardly be any major changes in the relative size of the faculties in the near future, either.

3. Gender and Language

In addition to student flows, gender and language relations appear to have stablized in Finnish universities. Throughout the century, exceptionally many women have enrolled in higher education compared with the European average. To take an example, the "Committee for Combatting the Student Boom" that submitted its report in 1935 stated that the amount of women students in higher education was proportionally largest in Finland compared with the rest of Europe. It was typical of the attitudes at that time, however, that the committee discussed women in higher education under the title "Reasons for Excess in Secondary School Graduates".

Nevertheless, Finnish women gained the majority in enrollment in higher education as early as in the middle of the 1950's whereas in several other countries the same level was reached a couple of decades later. The proportions between the genders at Finnish universities have not radically changed during the last three decades.

Women students have, however, gained the majority also in traditionally male-dominated disciplines like medicine, social sciences and theology. In fact, only the technical field has remained clearly masculine. Quite another thing is how the labour market selection mechanisms continuosly keep up the inequality between the sexes.

The status of Swedish at the University of Helsinki was a source of dispute long into the 1930's and the language issue had a fundamental influence on establishing the Finnish-speaking and Swedish-speaking universities in Turku, for instance. However, already at the beginning of the century the majority of those who entered higher education had a Finnish-speaking background and at the beginning of the 1960's 90% of the students enrolled were Finnish-speaking and that is also the current situation. Still, a comparison between those applying to higher education and those admitted reveals that a Swedish-speaking background is an asset in higher education.

4. Changes in Regional Background

Institutions of higher education have expanded and thoroughly changed during this century in Finland. Thus, it might be assumed that the regional background of the student population would also exhibit thorough changes, especially as increasing equality in this sector has been one of the major goals in the policy of higher education since the 1960's. Nevertheless, the regional recruitment of students has altered fairly little in eight and a half decades - or to be more specific - the levelling development during the 1950's and 1960's has now turned into growing differences between the provinces, as can be seen in Table 3.

The changes in students' regional background are easily distinguished. During the first decades of the century the recruitment of students into higher education was relatively even in all regions of Finland, at least when considering that higher education at that time was concentrated in southern Finland. Despite the regional expansion of higher education in the 1920's and 1930's the southernmost provinces of Finland increased their share of the student population. Measured with the amount of starting places, higher education was, in fact, still concentrated in the region of Helsinki.

After World War II, as circumstances gradually became normalized, the regional distribution of new students also started to become more even - at first slowly, but already in the 1960's more quickly. The shares of the different provinces were the most even at the end of the 1960's and at the beginning of the 1970's.

Table 3. *Regional background of new university students by province 1900-1985 (%).*

	Years								
Province	1900-05	10-15	20-25	30-35	40-45	50-55	60-68	70-77	80-85
Uusimaa	21	23	30	28	29	25	24	26	27
Turku and Pori	17	16	16	15	14	15	15	14	14
Häme	13	13	12	13	11	11	12	14	13
Kymi	3	5	5	4	6	6	7	6	6
Mikkeli	5	4	4	4	3	4	4	4	4
North Karelia	3	2	2	4	2	2	3	4	3
Kuopio	6	6	4	5	5	5	6	5	5
Central Finland	5	4	2	3	3	3	5	5	5
Vaasa	8	8	8	8	8	8	10	8	9
Oulu	5	6	4	5	4	5	7	9	9
Lapland	1	1	1	1	2	2	3	4	4
Other (areas lost in war, foreigners)	13	12	12	10	13	14	4	1	1
Total	100	100	100	100	100	100	100	100	100

Several interrelated factors can be detected behind this change. First, demand for equality and a full utilization of the so-called reserve of talent were regarded as a significant part of educational and social policy thus, in a way, creating the ideological backdrop. The structural changes in society constituted, however, the most important factor. The grammar school system expanded dramatically after World War II and in the 1950's and 1960's the network of senior secondary schools in especially rural municipalities became denser. Thus, the number of young persons eligible to apply for admission to universities started to increase rapidly. Higher education expanded simultaneously - the University of Oulu was established in 1959 and there was a great increase in enrollment at the previously rather small universities in Turku, Tampere, and Jyväskylä. Hence, the growing number of senior secondary school graduates had more study places than earlier in more localities than earlier to choose from. Young persons coming from the peripheral areas of Finland naturally benefited from this development most (see the appendix).

This levelling development did not, however, last very long since already at the end of the 1970's the proportion of the southernmost provinces started to rise whereas the number of students coming from eastern Finland, for instance, was at times relatively seen even smaller than at the end of the 1960's. This can be explained by the fact that the population gravitated southwards because of migration. On the other hand, the expansion of the network of senior secondary schools stopped during the 1970's and the admission rates to universities did not grow at the same pace as earlier, either.

Thus, admission to higher education became more difficult. The stricter selection favoured the Province of Uusimaa around Helsinki as well as the university cities with their neighbourhood regionally and the upper classes socially, as will be seen later on. To take an example, in 1970 35% of the new students at the University of Oulu came from the city of Oulu with its neighbourhood, in 1985 the figure was 54%. In Joensuu the corresponding figures were 46% (1970) and 53% (1985). So, it can be claimed that the regional background of university students has become narrower during the 1970's and 1980's on two levels - more and more students come from the Province of Uusimaa and, on the other hand, from the immediate neighbourhood of the provincial administrative centre and of the university.

On the level of universities and provinces, the main student flow has during this century transferred from the Faculty of Humanities and Arts and the Faculty of Mathematics and Natural Sciences at the University of Helsinki to the most popular faculty at the nearest university. The home province has become the most important area of recruitment for nearly all universities - in a way, selection and higher education became regional when the present network of universities was established. The changing student flows and the regionalization of selection were also reflected in recruitment to various fields of study - economic and technical faculties situated mostly in southern Finland received a greater share of their students as earlier from the neighbouring areas. On the other hand, in eastern and northern Finland more and more students applied for admission to educational faculties in addition to faculties of humanities and arts. Students from the Province of Northern Karelia and the Province of Oulu constituted the largest group among students of educational sciences in the 1980's. In other words, Finland was getting humanities-educational university regions on one hand and technical-economic university regions on the other hand, to put it bluntly (see the appendix).

5. Social Distribution

The social background of new university students has changed at approximately the same pace and in the same direction as the regional selectivity. This as such indicates that these factors are closely interrelated. There are, however, factors of uncertainty in comparing and interpreting the social distribution as the data was collected and categorized differently at different times. Thus, the figures are not always commensurate but the general outlines of the changes can be seen on the basis of the data.

According to Figure 2, the social background of university students seems to have changed in three waves that largely coincide with the changes in the regional distribution. Before World War II the social background of the students was relatively stable and most of the beginners (over a third) belonged to the second social group, i.e. lower white-collar personnel and private entrepreneurs. About one third of the university students had an upper class background, and 15% of the students had agricultural or working class backgrounds, respectively.

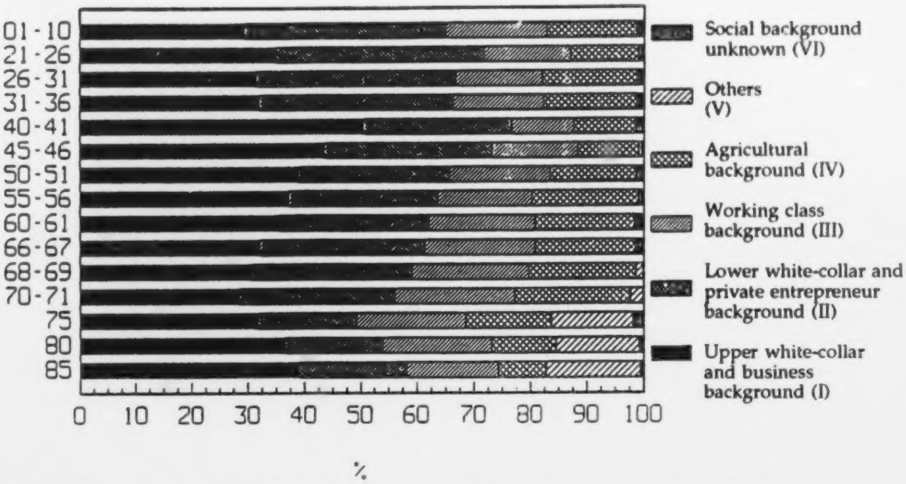

Figure 2. *Social background of new university students in Finland 1901-1985 (%).*

The exceptional years during World War II made the socioeconomic distribution significantly more upper class. This is what usually happens at times of crisis. However, from the beginning of the 1950's till the end of the 1960's the proportions of the various groups became more even so that at its best, the most significant four groups contributed each over one fifth of the new students. Still, in all the years cited the greatest number of enrollments come from the highest social group - from upper white-collar and business background. The roots of the development can largely be seen in the expansion of the regional background and the social and educational changes supporting that expansion. During the 1950's the number of senior secondary schools increased, during the 1960's the number of starting places at universities almost doubled.

In the 1970's and 1980's the student population at universities seems to have become more elitist. This must be the conclusion even though the figures from the last three years are not fully commensurate with the earlier figures. The increasing share of the highest social group is, nevertheless, indisputable. The amount of students with lower white-collar or agricultural backgrounds has decreased the most - the share of the latter was nearly halved in a decade. A new group has been introduced: the Others (V) category with retired or unemployed parents, students or others outside the labour market. Unfortunately, it was not possible to break down this group by e.g. previous occupations to improve the informativeness of Figure 2. The diminishing share of students from lower white-collar and private entrepreneur background as well as from agricultural background compared with the figures from the 1960's is at least partly linked with the growth of the category Others. The decreasing number of students with agricultural background reflects also the powerful reduction of agricultural population already during the 1940's and 1950's. As regards students with working class background, the decrease has been clearly smaller.

The recruitment pattern of new students to various universities is traditionally somewhat different for different social groups. These differences became considerably less pronounced during the 1960's when actually only the student population at the University of Helsinki remained virtually unchanged. In the 1970's and 1980's the different socioeconomic profiles of various universities became sharper. The same change can be seen as regards various fields of study - the traditional leadership of the upper classes in legal sciences, medicine, economics, and technology weakened momentarily during the 1960's but was restored and even strengthened in the next decade.

6. Unrealized Equality

As a whole, the educational equality set as an important goal during the years of educational optimism in the 1960's has not been permanently realized at least when measured with the structure of the student population in higher education. However, the overall figures of the whole student population or all the universities obscure the great differences between the various universities - some universities and faculties recruit their students regionally and socially more evenly than others. Similarly, in some provinces the structure of the student population and their location in different fields of study are more varied than in others.

Generally speaking, it can be said that the so-called multi-faculty institutions (universities) recruit their students more evenly and from more varied regions of the country as well as from more varied social groups than the so-called specialized institutions (e.g. universities of technology). On the other hand, the universities in Helsinki area have always been - and still are - more regional and elitist than other universities because of the amount of population and the socioeconomic distribution of the population in their area. The conclusion in several earlier studies that higher education cannot diminish the differences between the various social groups alone is confirmed - and also given new dimensions - in this study. Higher education, on the contrary, seems to strenghten the differences as the data seem to show that *the highest social group is over-represented in view of its population percentage among students from all parts of the country.*

Higher education is not a shortcut to welfare or an automatic motor for regional development, either. In Finland new universities were established outside the Helsinki area from the late 1950's as part of a conscious regional development policy. But employing the graduates is at least as important as creating new starting places at universities - this can be seen in e.g. statistics on migration by the graduates (see Haapakorpi, 1989).

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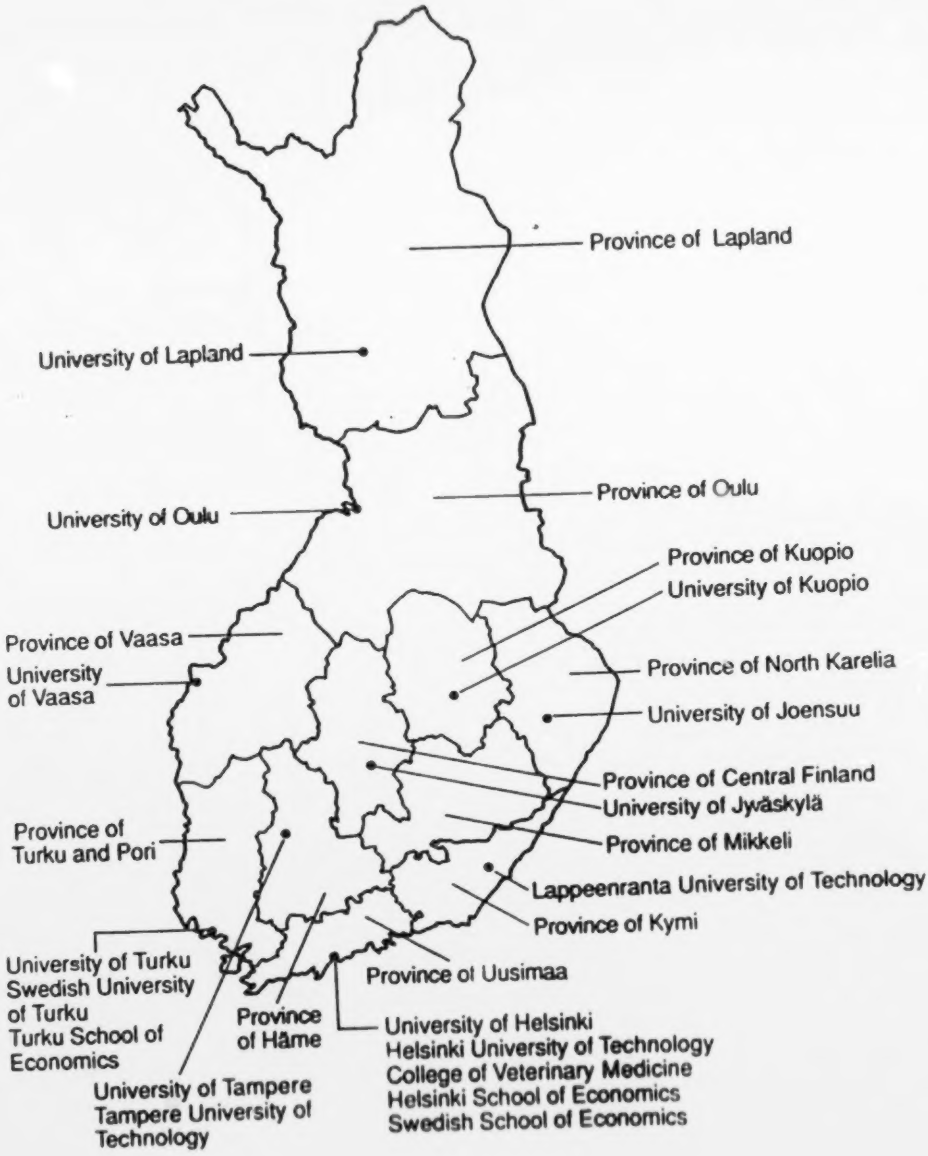
Appendix

Universities and provinces in Finland (1990)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Province of Central Finland
University of Jyväskylä
Province of Turku and Pori
Province of Mikkeli
Lappeenranta University of Technology
Province of Kymi
University of Turku
Swedish University of Turku
Turku School of Economics
Province of Uusimaa
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University of Tampere
Tampere University of Technology

Selection of Matriculated Students into Further Studies

Hannu Jalkanen

1. Malfunction of Educational System

In the spring of 1990 the Finnish Cabinet submitted a white paper on educational policy to the Parliament, stating that there are malfunctions in the Finnish educational system when it is assessed as a whole (Development Needs and ... 1989). To take an example, the educational system does not react adequately to changes in working life, to growing demand for education, or to changes in valuations and attitudes that are reflected in the demand for education.

The most worrysome current malfunction of the educational system concerns the impopularity of vocational education compared to senior secondary schools, the slow placement of students in further studies, the prolongation of studies and delays in recruitment into working life. The senior secondary school is particularly problematic since it is the school form that prepares for higher education but only one third of the matriculated students can actually gain admission to universities. This problem has not been eliminated although universities and other education that require matriculation examination have enlarged their intake. This has only increased multiple education and change of study places, which, in turn, have resulted in new difficulties in student selection.

Thus, since the educational system does not adequately correspond to real needs, the fact that young people persist in their goals for further studies can be seen as a disorder from the viewpoint of the educational system. In this conflict situation where there is an imbalance between the supply and the demand for study places, the young person must have aptitude and make more efforts to gain admission to desired further studies. Therefore, many young people try to improve their chances by all possible means, for instance by attending expensive, private cramming courses or by studying temporarily somewhere else. This kind of procedure takes, however, a lot of time and requires a lot of money, both from the viewpoint of the young person and of society. And despite all this, all the students who gain admission to universities do not take degrees, and it is difficult to find effective ways to help them.

The Cabinet presented several reforms to repair the above-mentioned mismatches of the educational system. These reforms include both the contents of instruction and the structure and administration of education. It is suggested that the alternatives after the comprehensive school, i.e. vocational education and the senior secondary school should be combined to form a youth school which would give eligibility for further studies in addition to vocational certification in some field. Also, the present higher-level vocational education would be developed into vocational universities/ polytechnics that specialize in a certain field. Both these proposals have well-known international models. Furthermore, adult education would become more versatile than today. Changes in university education would, however, be slight at this stage.

2. Research Problems

One of the most visible problems in our educational system is the slow placement of matriculated students into further studies. This phenomenon is, in some contexts, called student jam. It is also linked with problems like drop-out and prolongation of studies, and wastage of study places even in popular study lines. There have been attempts to solve this by increasing the number of study places and by developing selection procedures so that the best possible students for each sector of education could be found. There have also been attempts to eliminate drawbacks during studies with the help of pedagogical and social reforms, for example, but it was only the white paper on educational policy by the Cabinet where the student jam was tackled by means of a broad reform of the educational system.

The functioning of the educational system is often viewed on the basis of data collected every calendar year when the applicants include matriculated students from several age groups and, thus, give only a cross-sectional picture of the activities. Follow-up of each age group is required, however, in the study of application and study processes so that it becomes possible to view also the dynamics of the behaviour of matriculated students - to relate application and studying to other activities and to individual backgrounds of the matriculated students.

This article attempts to examine the study careers of an age group of matriculated students as well as of individual matriculated students as an interaction between the subjective selection of career and the selection made by the educational system.

Generally, the problems are:

(i) Into what kind of education are matriculated students selected and what kind of stages does the application process consist of?

(ii) How are the selection process and final result related to the backgrounds and earlier plans of matriculated students?

3. Research Data

The group studied consists of 870 students who graduated in 1984 and represent the age group of matriculants relatively well. The target group constitutes one half of the students included in the Finnish data for the IEA Second Science Study in 1984 (Leimu 1988). The age group of matriculated students in 1984 was nearly 30.000, approx. two fifths of the whole age group.

Data on plans for further studies and on life situation were collected in 1984, and about four years later, at the end of 1987 the target group was presented with a new questionnaire on events and experiences after the graduation. About 75% returned the questionnaire.

Thus, the outcomes of application to further studies and some factors connected to it are examined on the basis of the students' own experiences. At the time of the last questionnaire the students were 23 or 24 years old so that, in addition to a career, they were also taking their place in society also in terms of social and economic roles.

The results are part of a larger research project called "From youth to adulthood" whose starting points and results have been published earlier (for instance Volanen & Jalkanen 1988 and 1990, Mäkinen 1989 and Jalkanen 1990).

4. Examination of Application Process

Application process refers to the part in the interface between the supply and the demand for study places - between the individual and the educational institution. It starts with the matriculation examination and ends with commitment to studies. In this process, application, use of obtained study place, and possible change of career are dependent on the student's initiative whereas educational institutions select their students among the applicants.

In the beginning, the application of many matriculated students is guided by their earlier plans for further studies and for a career. When the process is prolonged, it is also influenced by feedback and other experiences.

In this context, the first application, the first entrance to studies, and the final entrance to studies are the stages of application that will be examined. Thus the purpose is to include also studies that students may have carried out during the transition period. The results of application are described both from the viewpoint of the educational system (by means of the amount of students) and from the viewpoint of the students (changes in the volume of the different stages of application). Changes in study careers and priorities are to be followed with respect to the level and the sector of education.

4.1. Subjective and Institutional Selection

Almost every young person who starts his/her studies in the senior secondary school plans to continue them after the matriculation examination. During the senior secondary school they get more information about the admission requirements to various careers, and on the basis of this information they weigh their chances to find a suitable career. Thus, after the matriculation examination, they must shift various alternatives already before application in order to gain admission into the best possible of the careers that they assessed as realistic choices. Therefore, it can be expected that particularly those matriculated students who are not sure about their choice will be active and persistent in application to further studies.

In the following we examine the stability of application and the likelihood of gaining admission on the various application occasions. It is hoped that the data will reveal the tactics used, and the changes in orientation towards further studies in addition to the fact that it describes the application activity of matriculated students.

Figure 1 describes the relative severity of institutional selection on various application occasions during four follow-up years. The value indicating the proportion of those who gained admission on the respective occasion is presented as a deviation from the average of admission percentages in the whole application process.

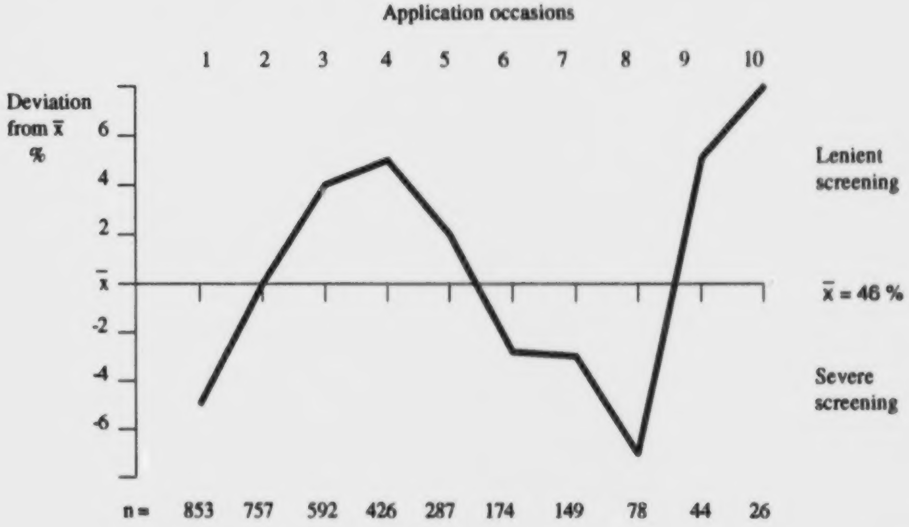

Figure 1. *Relative severity of institutional selection on various application occasions.*

According to Figure 1 the screening seems to be more severe right at the beginning and after the middle of the application process than before the middle and at the end of it: changes in institutional selection form a kind of wave. This is probably due to the fact that, in the beginning, most matriculated students apply to education optimistically according to their plans and wishes but right after the first screening, they revise their plans - or they, in addition to applying to their first preference, apply also to other programmes. The influence of this revision disappears, however, after a few application occasions and those matriculated students who are still applying to study places are obliged to revise their plans once again.

These shifts are clearly depicted in Figure 2 which shows the relative changes in the demand for the various levels of education during the application process. The proportion of each level of education on various application occasions is shown, again, as a deviation from the average demand for respective level of education.

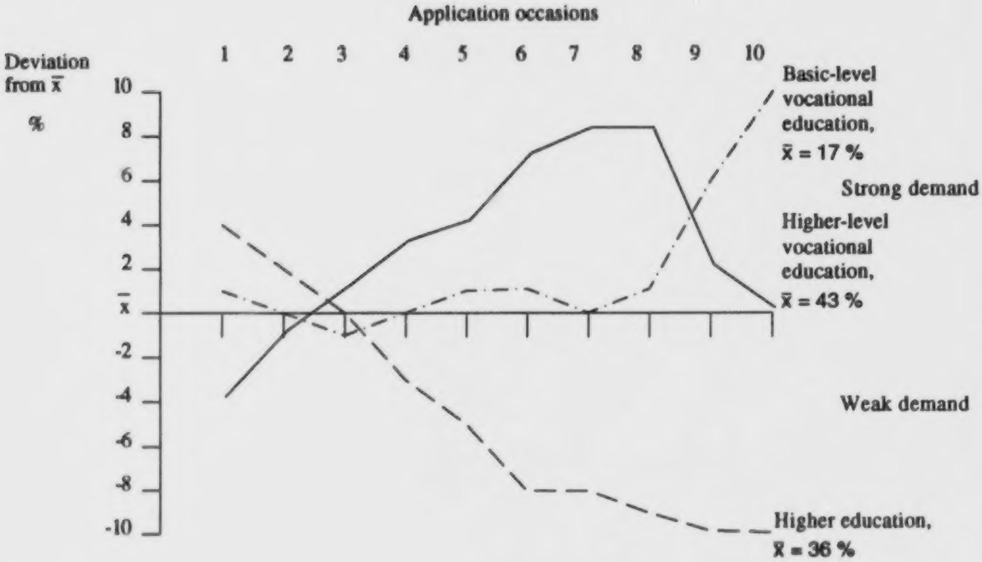

Figure 2. *Relative changes in the subjective demand for study places by level of education.*

Figure 2 shows that each level of education has its own demand profile. The university has the clearest profile. The relative demand for university education starts to fall steadily after arduous application at the beginning, but towards the end the decline slows down a little. Compared with this, the relative demand for higher-level vocational education is almost the opposite. After a modest start the demand grows stronger steadily towards the end until it again decreases right at the end. As a result of this the relative demand for basic-level vocational education increases almost drastically.

It can be inferred from the above that the institutional selection is reflected in the subjective selection especially with respect to second-best options. In the demand for study places, an interaction is created between the various levels of education, which obviously both the applicants and the institutions are aware of but they are, however, unable to avoid the drawbacks connected with this interaction. From the viewpoint of the age group, higher education seems to have the most independent demand in this interaction.

For the majority of the age group of matriculated students, the original demand for study places is obviously directed mainly by their general values and vocational objectives, but the second-choice demand seems to be directed by an assessment of the likelihood of admission to education. Admission possibilities are tried to increase by frequent changes of the application target. Because the opportunities of the applicant are limited and the institutional selection is inflexible, these changes do not necessarily bring about the desired result since increasing demand means that screening will get more severe again.

4.2. Different Calendars of the System and the Students

Application is the first step in starting further studies. The application of the target population into further studies can be examined from 1984 to 1987. Data concerning initiation of studies come from the same period, and the maximum number is thus four.

The group examined in this study applied to education very actively. As many as 98% of them applied to education at least once, one half of them at least four times, and 3% of them even ten times. The following individual-level means describe the volume of the application process:

-applications, total number	3.87,
-admission into further studies	1.78,
-screening in entrance examinations	2.08,
-start of studies	1.35,
-degrees taken	0.48 and
-drop-out	0.17.

The outcome of this process by each year is presented in Figure 3. At the beginning of the application process, degrees and drop-outs can be regarded as a transitional period.

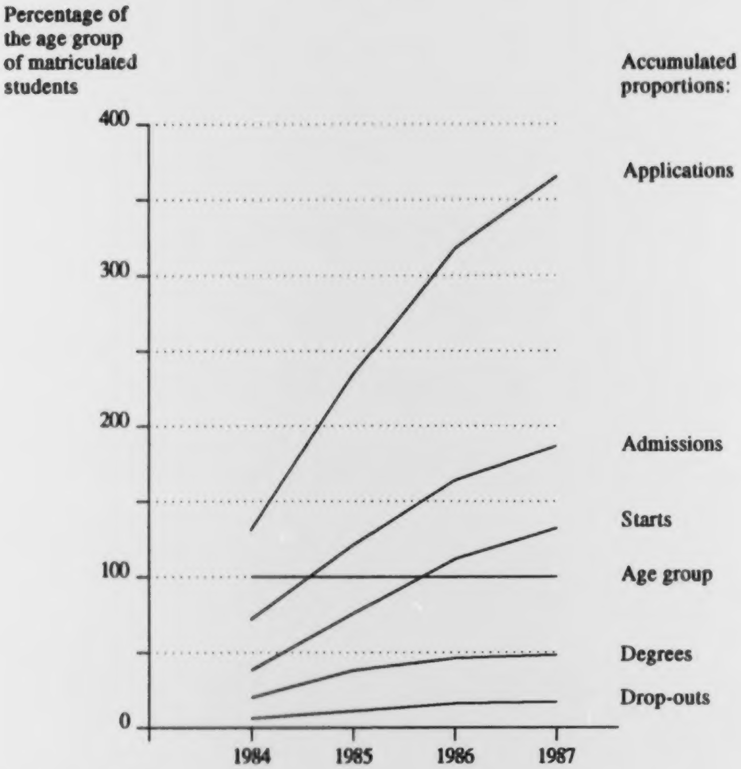

Figure 3. *Accumulated results of application to further studies during four years.*

Figure 3 shows that the volumes of the various stages of application clearly exceed the size of the age group: in the number of applications, already in the first year; in the number of admissions into education, in the second year; and in the number of initiated studies, in the third year. The numbers still grow even after this since many students who have taken a degree or dropped out of education reapply to further studies. Most of the degrees that are taken during the transitional period are from the basic-level vocational education whereas most of the drop-outs come from long-term studies.

Figure 4 presents the situation where each admitted matriculated student has taken up his/her first study place, and this figure can be seen as a kind of calendar of selection to further studies. Each year shows the current situation. The start of studies is analyzed, also by the level of education. As can be seen, starting in higher education and in lower-level vocational education diminishes year after year. Higher-level vocational education, on the contrary, is very frequently started in the second and third year. This pattern is fairly consistent with that of the application (see Figure 2).

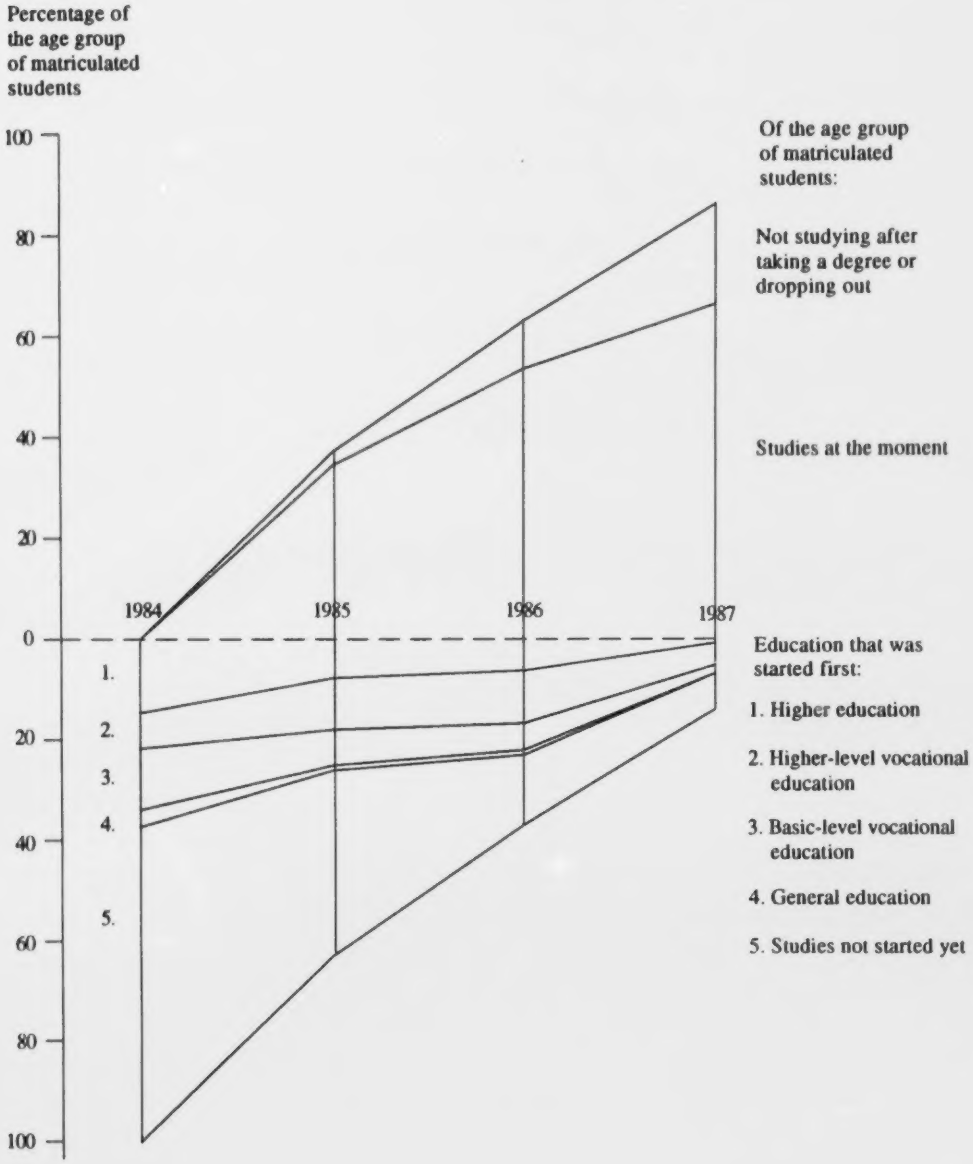

Figure 4. *The proportions of those who entered their first further studies during various years, broken down by the level of education (N = 870 = 100%)*

Although the age group of matriculated students seems to find a place in further studies in three years (Figure 3), the placement is clearly slower on the level of the individual, and not all matriculated students have been able to start further studies even after four years despite several applications (Figure 4).

This is a result of the fact that some get more than one admission. The selection to further studies both for the first and for the final time has taken place as follows:

Table 1. *The percentage of the matriculated students of 1984 who have started further studies in different years, broken down by the first and the final start.*

Studies started	First start	Final start
In the first year	37	18
In the second year	26	25
In the third year	23	28
In the fourth year	7	22
Has not received a study place despite applications	5	5
Has not applied to education	2	2
Whole age group of matriculated students %	100	100

N = 870

Table shows that over one half of those who started their studies immediately after the matriculation examination will still use another study place. This happens most frequently during the fourth year when two thirds of the starters have used at least one study place. Also some of those who start their studies in the second, third or fourth year will use several study places.

4.3. Transitional Studies as a Boost for One's Desired Study Place

The observed changes after the first admission and entrance indicate two kinds of rationales. The transitional period, another degree or drop-out, has from the beginning been a conscious choice to achieve the original goal and, thus, application to the other type of education has been predictable. On the other hand, part of the students who started their studies have made the decision to apply to other type of education later during their studies or after a degree, and this behaviour cannot be predicted.

Table 2 shows what kind of proportion of the age group of matriculated students start their final studies directly or via a transitional period. According to it a little more than one third (35%) start further studies at least twice, and a little more than one half of the age group of matriculated students (58%) start further studies only once. Most of those who start studies only once gain admission to the level of education they applied to in the first application.

Table 2. *Strategic stages of the application process, broken down by the level of education.*

	First application	First start		Final start	
Level of education	All	All	As a transitional period	All	After a transitional period
Higher education	39	29	6	34	11
Higher-level vocational educ.	34	32	8	42	17
Basic-level vocational educ.	18	26	17	17	7
General education	2	6	5	1	-
Total %	93	93	35	93	35

n = 809 (= 93% from 870)

As regards transitional periods in application to further studies, the various educational levels can be characterized as follows:

- General education is used as a transitional period equally for basic-level vocational education, higher-level vocational education, and higher education.
- Those who start their studies in vocational school regard it transitional education or as a final selection almost equally frequently. As transitional education, the selection of vocational school is original, or it has been preceded by unsuccessful application to tertiary education, and, finally, the applicant ends up in another type of vocational school or higher-level vocational education.

- Most of those who originally aimed at higher-level vocational education also start their studies there, in due time. At the beginning of the process, however, part of those aiming at higher-level vocational education also try to gain admission into higher education. At the end of the process, also those who used basic-level vocational education as a transitional period gain admission into higher-level vocational education.
- Higher education is used less than the other levels of education as a transitional period, except for other university-level education. Thus, the position of higher education is clearly more independent than that of higher-level or basic-level vocational education. A considerable part of applicants to higher education must, however, be content with vocational education.
- In addition, it should be noted that 5% of the age group of matriculated students do not gain admission to any education after several applications. Most of them aimed originally at higher-level vocational education.

From the viewpoint of the whole age group of matriculated students, the transitional period strengthens the connection between the original goal and the final start. In other words, it increases the significance of the first application as a predictor of the final result in the application process. This connection is the more clearer, the higher level of education it concerns.

5. Application Process in the Light of Some Backgroud Variables

The preceding chapters have concentrated on our first research task, the description of application process at its various stages. In the following we examine our second research problem, the significance of matriculated students' background (home, school, region), gender, and plans concerning further studies at the various stages of the application process. Table 3 presents various results of the application process and factors connected to them.

Table 3. *Factors connected to the various stages of application to further studies.*

Factors connected to the result	**Results of the application process**			
	Amount of applications	Amount of starts	Using a transitional period	Level of education of the final start
Father's SES	-	-	-	xxx
Father's basic education	x	-	-	xxx
Mother's basic education	-	-	x	xxx
Region	-	xx	xx	xx
Gender	xxx	xxx	xxx	xxx
School report	-	x	-	xxx
Reason for starting senior secondary education	-	x	-	xxx
Educational plans after senior secondary school	-	xxx	-	xxx

Statistical significance:

xxx = $p<0.001$
xx = $p<0.01$
x = $p<0.05$
- = $p\geq0.05$

Without any detailed analysis of the connections, it can be stated that the result of the application process concerning the whole age group of matriculated students can be predicted reasonably well because a favourable background has a clear connection to studies at the university level. Also the student's stable orientation and decision-making have a similar effect on the result of application, and this can be seen also later on as satisfaction with further studies.

Thus, the result of application to further studies depends on the direct and indirect resources of the applicant. Some of these resources are linked with clearly subjective criteria, from the viewpoint of selection: well-educated parents, good school achievements, more urban domicile, and male gender have a statistically very significant correlation to studies at the university level. In general, background factors are not so much connected to the volume and model of activity of the application process than to the final result. One obvious exception to this is the gender: girls apply to, start in, and also use transitional education clearly more often than boys. Regional background is also, to some extent, reflected in the application process so that especially those matriculated students who completed their senior secondary education in larger towns avoid the use of transitional education. Furthermore, it can be said that students whose fathers' educational level is lower than the average must apply to education more often than others in order to gain admission into further studies. Also those individuals who did reasonably well at school start further studies more often than those who did poorly or extremely well. Those matriculated students whose mothers have either the lowest or the highest education use transitional education in applying to further studies.

6. Education on a Closed Market: Some Conclusions

From the point of view of the educational system the supply of study places covers the demand of the age group of matriculated students satisfactorily because 95% of those who apply to education start their studies directly or after a transitional period. This process may take several years, though. Also one fourth of the selection made by educational institutions can be seen as a failure because this is the proportion of those who do not use a study place they have obtained.

From the viewpoint of the age group of matriculated students, the immediate outcomes do not seem very good since the subjective selection - application and commitment to further studies - results often in a failure.

If, even after persistent application, the matriculated student has not obtained a study place, he/she has to reassess his/her chances to gain admission into the desired study line, and this usually leads to application to such sectors of education which are regarded as easier to gain admission into. In addition to feedback given by the process, changes in the life situation can direct subsequent application to education. This searching for alternatives can ultimately lead to the situation where applicants from the same age group of matriculated students "flood" those study lines which are considered easier to gain admission into - and, to their surprise, in this situation it gets more difficult to gain admission also into these alternatives although the admission requirements have not been changed. For the same kind of reason it can also become easier to gain admission into education when, on the basis of subjective assessment, students do not want to apply any more "in vain" to education that is regarded as difficult. It can be assumed that this benefits those matriculated students from younger age groups whose assessment of their own admission possibilities has not been lowered. Thus, matriculated students from older age groups may, in fact, weaken their own chances and improve the chances of younger age groups.

Generally, the interaction between flexible subjective demand and rigid institutional supply can be described as a closed market where matriculated students from several different age groups try to gain admission into desired study lines by resorting to obtainable information on selection procedures and to their own experiences of the selection process. Although an individual student's searching for the right career by trying out several educational alternatives improves, from the student's viewpoint, the successfulness of the selection, it also wastes the supply of study places aimed at the whole age group of matriculated students.

More than one third of the age group of matriculated students seems to suffer from the imbalance between the supply of and the demand for further studies, and this mismatch cannot be removed so that the application of every matriculated student to further studies would be unproblematic. It seems, however, on the basis of the above statistical correlations that this imbalance could be decreased somewhat also by means of student selection.

The goal for student selection could, perhaps, be best reached by clearly defining the contents and vocational identity of various further education alternatives. This kind of information and effective counselling should be given especially to "problem groups", i.e. those who do not get this information directly at home, for example. In due time, when the general level of education gets higher and knowledge about various professions is wider spread, this problem will decrease but not disappear.

When concretly starting to remove the so-called student jam, the first problem, however, is the frequent use of transitional studies because it causes, to a great extent, the blocking of further studies. But if we prevent the use of transitional studies it would make it more difficult especially for girls, students from rural communities, and students in some hierarchically organized sectors of education (e.g. agriculture and forestry) to gain admission into further studies. A general speeding-up of the application process would also make it more difficult for uncertain students as well as for those who aim at especially higher-level vocational education to gain admission into further studies.

Thus, restrictions cannot be the solution. On the contrary, the intake numbers could be rised. For excample, as the identity of university-level studies seems to be the clearest and there is a strong demand for almost every sector, the intake could be slightly increased in some sectors, especially when the vocational grounds for this are also obvious. Possibilities for further studies at higher vocational level should also be examined more and the studies should be organized into functioning entities from the viewpoint of the educational and vocational structures.

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Distinction Strategies and Selection in the Finnish Academic Field

Juha-Pekka Liljander

1. Theory of Cultural Reproduction as a Starting Point

In general, various phenomena in Finnish educational research have been explained from within the institution thus forgetting the social context where education takes place. The adoption of a broad cultural and social perspective as the starting point for investigations can, however, yield a more adequate basis for the understanding of the functions of educational institutions. The problems of hidden curriculum that were brought up in the middle of the 1980's from the sociological viewpoint and along with that, Pierre Bourdieu's theory of cultural reproduction offer a broader alternative to traditional educational research in this sense.

When the university is examined as an agent of cultural reproduction, the life of the institution is analyzed in relation to the social functions of the institution. In this article, attention is focused on the functions of producing and selecting labour, i.e. on examining the reproduction of social power structures. Problems in university studies, such as superficial attitudes towards the subject studied or overemphasized achievement orientation, are not viewed as resulting from poor teaching practices etc. but, in the Bourdieuan manner, as a manifestation of the symbolic power struggle implementing the social and cultural division (Bourdieu & Passeron 1977; 1979).

When linking this theoretical frame of reference with empirical reality, the object of study is, in more concrete terms, whether or not the power struggle based on distinction strategies as described in the theory of cultural reproduction is distinguishable at Finnish universities. Success in this power struggle depends on the possession of cultural, social, and symbolic capital. Success is manifested, on the other hand, in the selection to social positions on various levels - for instance, in gaining access to the membership in the current scientific community.

2. Expansion of Education and Different Cultural Views of Academic Field

Since the 1950's profound changes have shaken the foundations of the Finnish university institution. This critical period has affected the whole higher education institution extensively and profoundly, penetrating even the basic social functions of the university. The functions of the university and other social institutions have been more closely linked together. This change in the relationship between higher education and its environment is manifested in new forms of activities adopted by the university. These aim at serving various social sectors and at securing their functioning. (Jolkkonen 1985; Kivinen & Rinne 1990; Lyotard 1985, 77.)

At the same time as the social tasks of the universities have gained in importance, higher education has also expanded quantitatively. There are more and more professions requiring a university degree. In higher education, this is seen as an increasing number of students specializing in their own specialization for a particular profession.

This expansion of higher education since the 1950's has had a significant impact on the nature of the university which is no longer merely a channel of education and reproduction for the social elite. More and more often also the offspring of lower social classes get their share of higher education and academic degrees and not only that small part of the age group selected on the basis of their advantaged sociocultural background. (Ahola 1990.)

The traditional, one and undivided university culture has, in a way, been duplicated along with the change. A professional or functional study orientation has gained ground at the expense of an elitist or intellectual study orientation. The traditional "Bildungsuniversität" is still, nevertheless, hidden inside the new "mass university" with main stress on narrow professionalism. (Liljander 1991, 14-17.)

The different ways of viewing the studying are clearly continuations of the division of educational field into two invisible study lines already during lower levels of education, which is also connected with the expansion of education. To put it bluntly, one of these study lines leads to cultivation and the other one to a pragmatic profession. (Rinne, Kivinen & Kivirauma 1984.)

In this new situation, it is possible to examine university education from two different cultural points of view. One of these is connected with the position, significance, and transmission of the prevailing culture in society. This theory of cultural reproduction by Pierre Bourdieu linked with French structuralism sees education as one important instrument in social reproduction. The educational system -

and the university as part of it - supports the power structures in the society by reproducing the cultural segmentation prevailing in society, i.e. how the cultural capital (e.g. degrees and qualifications on different levels) is divided between representatives of various social classes. (Rinne & Kivinen 1984.)

It would also be possible to use the viewpoint of cultural production represented by Paul Willis from the less structuralistic Birmingham school of thought in the analysis of higher education. In this frame of reference, the analysis starts from the bottom - from the viewpoint of the culture of the dominated. (Willis 1981; Rinne & Kivinen 1984.) Thus, an emphasized profession-orientation and, in a way, an anti-intellectual approach to studies would represent the counter-culture of the lower social classes towards the old elitist university culture.

The basic starting-point for this article is, however, the theory of cultural reproduction. The behaviour of those students who take a functional or unintellectual attitude - from the viewpoint of the dominant elite - towards their studies is thus considered to reflect their displacement outside the intellectual field proper.

When talking about an intellectual field at the university or about a field in general, we do not refer to anything that exists or is given in social reality. The concept is, in fact, a methodological instrument with which the university can be examined as a structural entity of positions and tasks. The structures of the field form a basis, or rather a framework, for individual activities in the social reality. (Bourdieu 1985, 105-110; 1989.)

The dynamics of the field - the struggle to dominate the field - are governed by general regularities and the knowledge of them helps analyze and understand the function of the field. The symbolic struggle for power is a kind of game and participation in that game presupposes that one recognizes its value and also accepts and masters certain specific rules. General regularities do not, however, totally determine one's behaviour and participation in the game does not presuppose total submission to the rules as the purpose of those acting in this field is to improve their own relative position in the struggle by changing the rules within certain limits. (Bourdieu 1985, 105-110.) Thus, it is essential to present things and, at the same time, also oneself in a new way by "stretching" out the rules - i.e. the ability to be able to stand out from the rest with the help of some kind of distinction strategies (Bourdieu 1984).

3. Different Students and the Intellectual Tradition of the University

In everyday thinking, students are perceived to be a homogeneous group with one and undivided student culture. Although the students' life situations superficially seem to be the same, studying is not - in the Bourdieuan frame of reference - either as an experience or in practice, similar in all the subcultures based on the socio-cultural background.

Differences in the way members of various cultural groups perceive social reality and differences of acting in certain environments become understandable through the concept of habitus. This concept is central in the theory of cultural reproduction as it functions as a bridge between the subject acting in the field and the structure of the field and thus helps overcome the absolute confrontation of subjectivism and objectivism when examining the activities of the individual. In the Bourdieuan discourse, the actions of the individuals cannot be directly linked with either the structure or the subject but, as people act in the social reality, they enact their personal way of life within the framework of the structure of the field. (Bourdieu 1977; Sulkunen 1982.)

The concept is not merely individualistic. As Rinne and Kivinen (1985) state - based on Bourdieuan thinking - habitus is a system of relatively stable and transmittable attitudes and aptitudes or dispositions which integrates the previous experiences of the individual and acts as a framework directing his/her actions. In the individual, habitus is in a way an embodiment of the uniformness of life determined on the basis of the special circumstances of a certain social class within a certain system.

Based on sociocultural background, there are, thus, various interpretation and behaviour models which are typical of certain subcultures. To take an example, the way members of lower social classes act in the social field is clearly functional. The elite seems - at least in outward appearance - to be above any self-interested tendencies in its everyday actions and in a way free out of necessity, whereas the members of lower social classes act in a more purpose-oriented way. (Bourdieu 1984.) In the educational field - and specifically at universities - the above difference is manifested in the fact that for students from lower social classes, studying is mainly a professional project aiming at a quick normalization of the student's life. The attitudes of intellectual upper-class novices towards studies are, on the other hand, characterized by appreciation of knowledge for its own sake as well as by an interest to develop themselves. (Bourdieu & Passeron 1979, 62-63.)

From this point of view, all the students at the university do not have equal starting points in the symbolic struggle for supremacy in the field based on distinction strategies. It can be said that the clash between different cultures - the various cultural backgrounds of the students as well as the related ways of perception and the one-dimensional expectations of the educational institution - appears to be the basis for the reproduction of social power structures. In this clash, the basis of division is expressly the culture of the elite that is linked with university traditions and emphasizes cultural values. (Rinne 1986; 1987.) The winners in this clash, and possibly future representatives of the dominant scientific community, are those whose cultural capital corresponds to the culture of the elite.

4. Some Empirical Findings

4.1. Studying as a Value in Itself and Distinction Tendencies

Several studies have verified that university students can roughly be divided into "intellectuals" who appreciate studies as such and into "functionalists" who see studying as a means to get a profession. Furthermore, empirical findings support the assumption that sociocultural background is related to the formation of either cultural or professional study orientation. (E.g. Bourdieu & Passeron 1979; Järvinen 1985, 135, 144-145; Katschadourian & Boli 1985, 28-39.)

This article is based on a study which also gave results that support the theory of cultural reproduction (see Liljander 1991). At the level of general attitudes towards studying, the different orientations which are linked with cultural background were clearly manifested. These orientations signal, at the same time, different readiness to function successfully in the intellectual field. On the basis of father's socioeconomic background, it is characteristic of the upper-class students to feel that the time of studying is the time to enjoy life and freedom. One should not rush the studies and not settle for only narrow studies but to add subjects and knowledge from outside one's own subject combination. Students from different sociocultural backgrounds had also different views on the profession-orientation of studies. Students from the upper classes emphasize the ideal of studying as a means of developing one's personality and general education. Students from lower classes, on the other hand, regard studying specifically as a means of obtaining abilities and technical skills that are needed in the future profession. (Figure 1.)

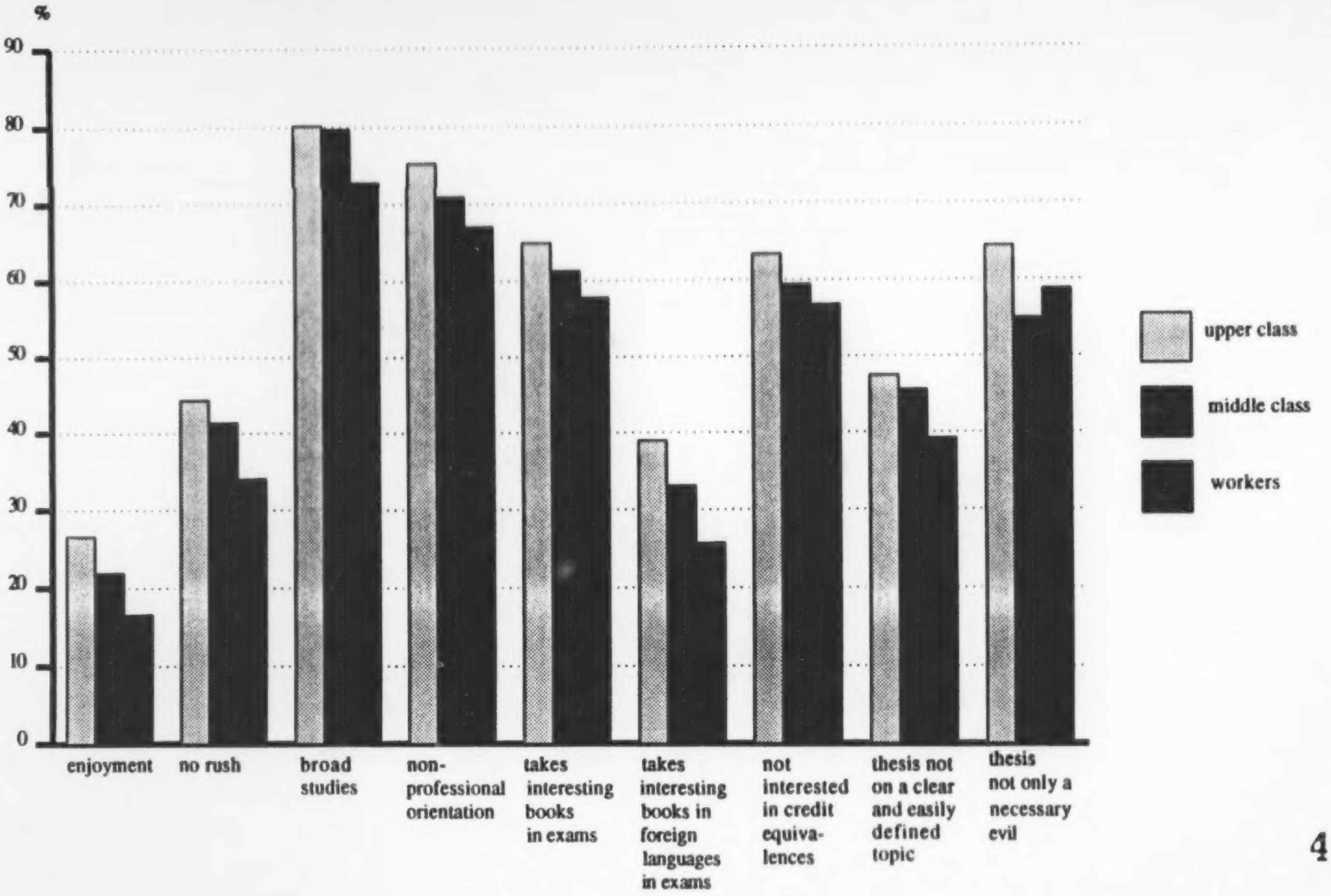

Figure 1. *Opinions on university studies and behaviour in concrete study situations by the student's socioeconomic background.*

General conceptions (views) were largely realized also in practice in several central domains of university studies. In selecting study units students from higher cultural backgrounds pay more attention to the intrinsic interest of the subject, and not so much e.g. to which of the elective textbooks are easier to read or how attending lectures and passing the final quiz might make it possible to avoid reading difficult textbooks for larger examinations. The fact that the textbook to be examined was in a foreign langauge was not decisive. This, in turn, supports Roos's (1985, 24-25) hypothesis that the mastery of foreign languages is a central factor in the repertoir of distinction strategies of the leading class in Finnish culture.

The culture-bound orientation to studying is manifested also in attitudes towards the thesis. The members of cultured classes do not regard the thesis as a "necessary evil" and do not merely try to get it over as soon as possible. On the whole, the attitudes of students from upper classes towards studying and also their study habits reveal an appreciation of studying and knowledge attainment as such. Thus, they can increase their knowledge capital and, simultaneously, their ability to discuss the subject matter from a fresh and unconventional point of view.

An attempt to improve one's relative position in the struggle that is going on in the field is inevitably embedded in regarding studying as a value as such and in rising above any professional utilitarianism. The aim is, in fact, to distinguish oneself by acquiring capital that is valuable in a certain field or by showing that one already possesses this capital. This was even more clearly manifested in the fact that students from upper-class backgrounds wanted to attend exotic courses on e.g. foreign cultures more often than other students. Furthermore, they were interested to tackle the kinds of thesis topics that had recently given rise to discussion and controversy in the academic world and would therefore be distinguishable from conventional and generally accepted themes. The elite students also discussed with members of the university's teaching staff more often than other students and they expressed their own opinions on topics relating to their study line - even when they disagreed with their teachers. Students from upper social backgrounds felt more capable of presenting their own ideas in different teaching situations than students with modest cultural backgrounds. (Figure 2.)

Analyses with regard of father's socioeconomic status were not by any means the only ones that gave results supporting the theory of cultural reproduction. The above differences between various social classes were also manifested with respect to mother's socioeconomic status, as well as with father's and mother's level of education as background variables. As a matter of fact, the student's domicile - and especially the

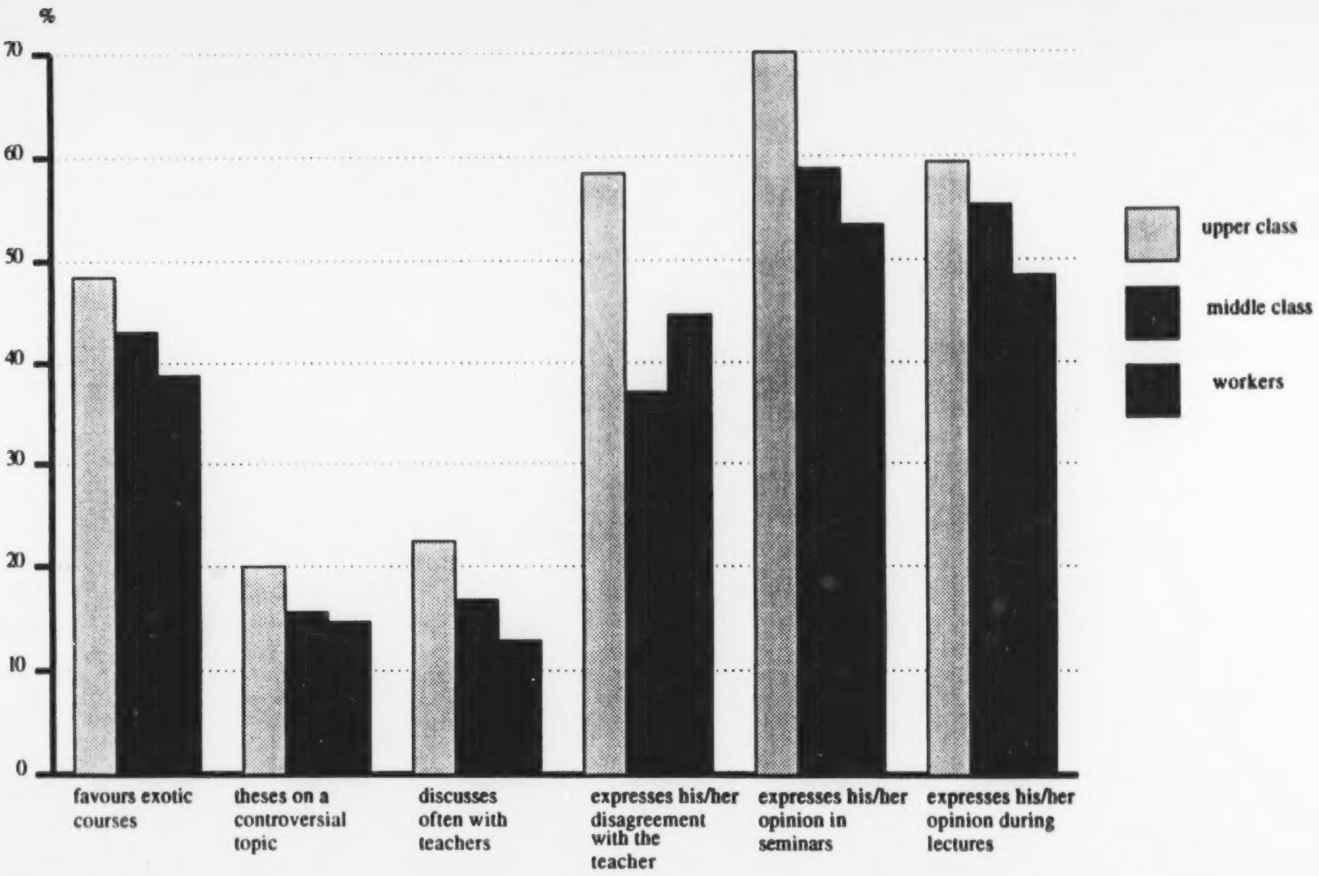

Figure 2. *The frequency of the use of various distinction strategies by the student's socioeconomic background.*

classification into university towns, other towns and rural communities that reflects their cultural atmosphere - was the factor that most clearly gave results that are in line with the hypotheses formed on the basis of the theory.

It can be seen in Figure 3 that students from university towns generally have clearly more intellectual attitudes towards studying. Their perception of studying as non-professional, as something valueable per se, is more concretely manifested in how they take examinations, choose minor subjects, and view their theses. The more intellectual attitude of the members of this group is also seen in their independence in planning their studies of the recommended study modules that are presented in study guides and aim at the optimum graduation time. Furthermore, the intellectual orientation is seen in an interest to follow the developments in one's own discipline even outside the study limits proper - in fact, to collect knowledge or cultural capital to serve the aim of distinction.

It can also be seen in Figure 3 that students from university towns are more ready to express their own opinions privately to members of the university's teaching staff and publicly in various teaching situations. Thus, they are in a way more willing and capable of making themselves noticeable in the scientific community.

On the basis of the results, it can be said that there are relatively clear indications also within the Finnish university institution of the symbolic struggle which is based on distinction strategies and where success is linked with the individual's sociocultural background. There was, however, one interesting observation regarding the generalizability of the theory of cultural reproduction. Namely, the model describing the struggle for supremacy in the field would seem to function better for male than female students. Male students who have an elitist sociocultural background have, on the basis of the results obtained, an advantage over other students in view of activities in the scientific community. Female students have, on the other hand, roughly the same status - lower than male students - in this struggle irrespective of their background. Female students from cultured backgrounds do not manifest or are not capable of manifesting their sociocultural potential to the same extent as male students from equal backgrounds. (Liljander 1991, 62-116.)

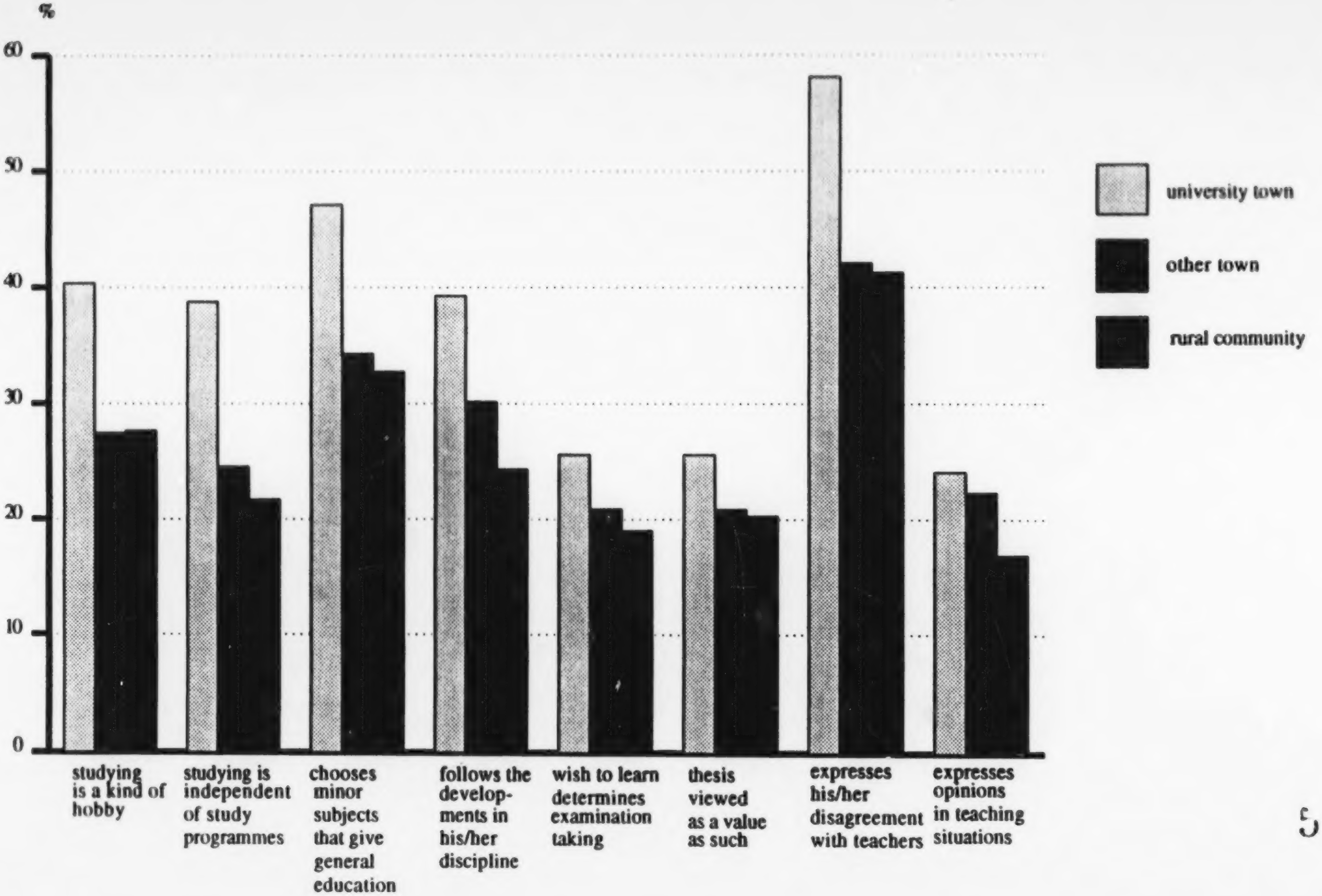

Figure 3. *The frequency of the use of intellectual study orientation and distinction strategies by the student's domicile.*

4.2. Obtaining Access to Membership in the Scientific Community

The study clearly indicated that an intellectual and in a way dilettantish or disinterested attitude towards studying in accordance with the traditions in the university institution is linked with the intention to become a researcher or start post-graduate studies (Liljander 1991, 106-108,140). It can be assumed, therefore, that these future representatives of the scientific community tend to have an upper class background. During the time when student groups were not yet so heterogeneous as nowadays it was taken for granted that students from elitist backgrounds occupied the leading academics positions (Ahola 1990). Later on, the significance of the socioeconomic background has not any more been as indisputable (Helminen 1978, 196; Mäkinen 1986).

The results obtained in this study did not support the theory of cultural reproduction in every respect, either, as the distributions in the analyses by researcher-orientation were not in accordance with the hypotheses. This is quite surprising, at least when thinking of the observations described above where the study habits of students with higher sociocultural backgrounds signalled an unquestionable supremacy in the power struggle on the intellectual arena.

Orientation towards post-graduate studies - an intention to write a doctoral dissertation or a licentiate thesis - seems, however, to be more easily predictable on the basis of the student's sociocultural status. As can be seen in Figure 4, analyses by mother's socioeconomic background, parents' level of education, and student's domicile gave results that support the hypothesis of the university as a cultural reproducer. The distribution was not as clear and consistent, however, when father's socioeconomic background was taken as a background variable.

On the basis of the above, it can be stated that the results reveal something about the social appreciation of research forum: obviously, it is no longer a field where it would be worth while for the members of cultured classes to compete and assert themselves. Instead, the clearer relationship between sociocultural background and the intention to write a licentiate thesis and possibly a doctoral dissertation reflects stronger ambition related to academic post-graduate studies. (Mäkinen 1986.)

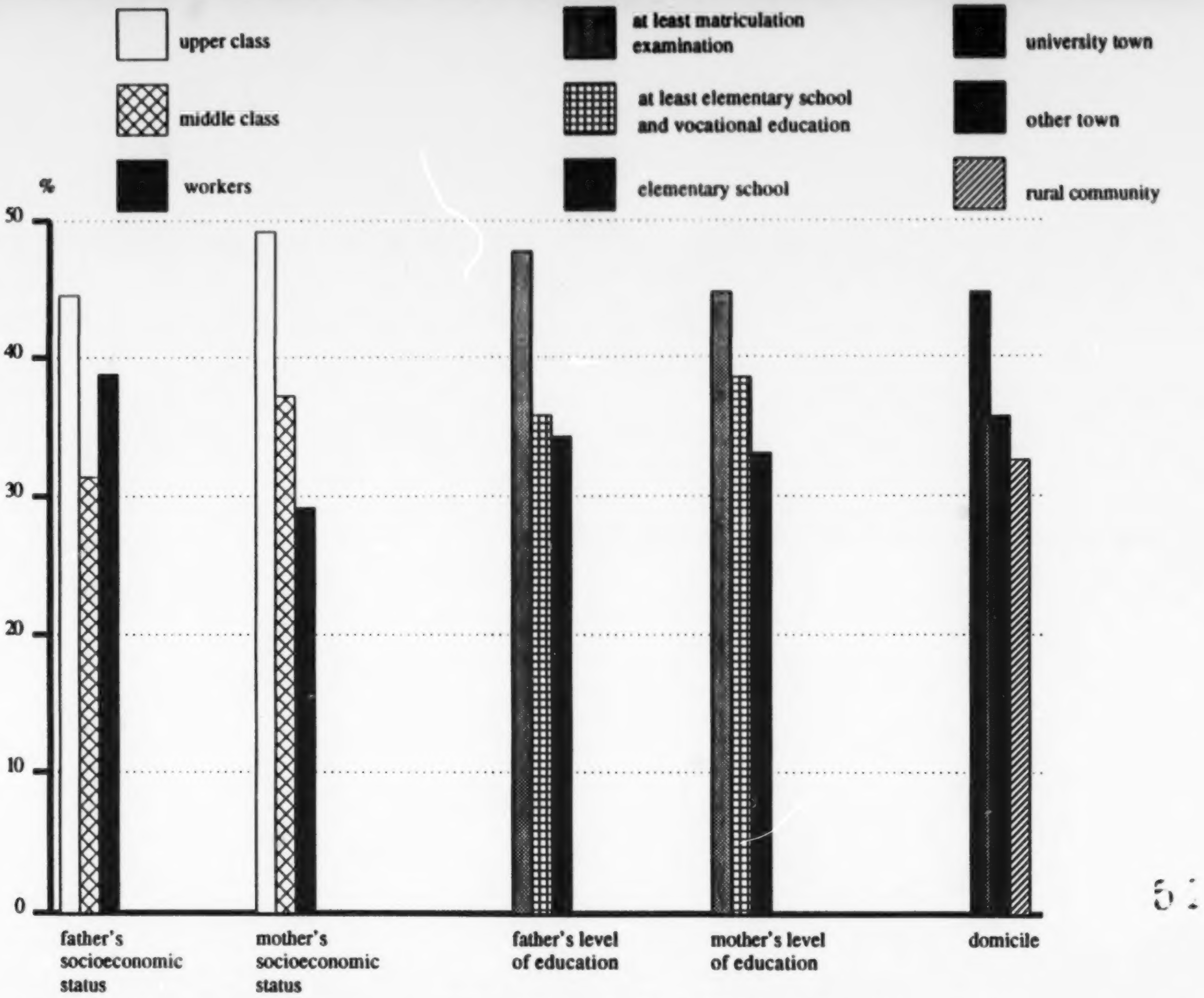

Figure 4. *The frequency of orientation towards post-graduate studies by student's sociocultural background.*

5. Discussion

When the results are examined, it can be noticed that, as a whole, they are in accordance with the ideas presented in the theory of cultural reproduction. Although the differences between students from various social classes with respect to their study orientation and scientific orientation did not always prove to be dramatic, it is not necessary to abandon the idea of the university as a kind of "ideological government machinery" (Althusser 1984). The Finnish university institution can also be examined as a system whose ultimate task is to reproduce the prevailing power structures of the society in the form of various social positions at different levels.

Simultaneously, several problems and phenomena in university studies can be seen from a new, broader point of view. To take an example, differences in study habits reflect the various academic working cultures rising from the specific circumstances of different social classes and they are linked with the power struggle that is going on in the university with the help of distinction strategies. Thus, a hidden curriculum controls the status of the students at university, and it indicates the existence of a kind of inofficial academic qualification process (Ahola 1990).

Adopting the intellectualism or functionalism of the study orientation as a basis for research represents, to some extent, a simplified view and describes the reproduction dynamics of the universities in a limited way. For example the model cannot, as such, be applied to analyses of every discipline.

As the study focused on the reproduction of power structures only with respect to the students' scientific orientation - researcher and post-graduate orientation - the image of the university institution as a reproducer of the professional status hierarchy is not comprehensive, either. Academic career and appreciation are not the only things or types of capital that are striven for at the universities. In fact, the whole field is composed of hierarchical layers on the basis of how much capital entitling to power and influence in society the various departments and disciplines can offer. An indication of this is the fact that universities and disciplines differ as to the class structure of their student body, for instance (Kivinen & Rinne 1991).

To get an overall view on the relationship between the creation of the power structure in society and the university, the Institute for Educational Research at the University of Jyväskylä has started a project which investigates among other things the reproduction dynamics in the Finnish university field as a whole. The project examines the status structure at universities in a seemingly equal society as well as the changes in the structure through exits from the field and internal transfers - drop-outs and changing place of study.

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Higher Education as a Field

Sakari Ahola

1. Introduction

The university institution has, throughout its history, served as a channel of education and reproduction for the social elite. Only a narrow, both culturally and socially selected part of the age group has reached higher education. Only with the expansion of higher education starting as late as in the 1950's has this situation begun to change (Ahola 1992).

In Finland, approximately one fifth of the age group gains admission to higher education but the number of those completing their basic degrees constitutes only a little more than a half of the the yearly intake of students. Roughly five percent of the population over 25 years of age has taken a master's degree at university.

There are 20 universities in Finland at the moment - 17 so-called science universities and 3 arts universities. There is a university in every province, except in the Province of Mikkeli, where they have, nevertheless, Savonlinna Teacher Training College and Translator Education College of the University of Joensuu. The Finnish university network is, thus, relatively broad; there are university units in approx. 20 towns including subsidiary campuses.

Improving educational opportunities have increased the proportion of students from lower social classes of the total number of university students and graduates. But the expansion of education also has resulted in a situation where university is no longer as efficient a channel of social advancement and does not give as secure access to high social positions as before. As people with university degrees have been forced to accept lower positions in the professional hierarchy, many academic degrees have become "inflated". According to Bourdieu, this is particularly intolerable for those upper class students who cannot convert their inherited cultural capital into an academic degree even though their success at work would not necessarily be dependent on education because of the family's economic and social capital (Bourdieu 1988, 163).

There has been differentiation also within educational sectors. To take an example, studying technology in Lappeenranta gets part of its social significance from the fact that studying technology in the capital, Helsinki, carries more prestige. This can also be seen in the social background of the students (see Isoaho et al. 1990). The same goes for many other channels of education, too (cf. Sweden/Palme 1989).

Although higher education has expanded considerably the struggle for gaining admission is getting harder and harder. There is a great demand for academic capital, especially degrees and qualifications as institutionalized cultural capital, and the competition to obtain them is hard. An academic degree still gives a possible access to important positions in society and to social exercise of power in general. Higher education as the last chain of the educational system is an important part of the reproduction process of social elites and power structures. Also inside the universities, there is an ongoing struggle for positions, power, esteem, etc. The appropriation of various capitals influences the admission into higher education as well as success in it.

Viewing higher education as a social field in the Bourdieuan manner means that research is focused on various positions in higher education, on those who occupy these positions, and on their capital as well as on the struggle for power regarding these positions, capitals and the supremacy in the field.

Higher education constitutes a very clear entity which Bourdieu calls a social field. The university institution is relatively autonomous. The Finnish Constitution, for instance, guarantees administrative independence for universities and they enjoy full freedom to teach and to do research. This autonomy is not, however, absolute but relative. Strong pressure is put on universities by the state, working life, and other interest groups linking higher education with the other fields of society.

2. On the Concept of Field

Bourdieu's way of viewing various sub-domains of society as fields is connected to the criticism of those intellectual traditions that are characterized by dichotomies like subject-object, structure-action, etc. Bourdieu criticizes in particular interactional approaches which "hide" the objective relations of social structures, in this case especially positions and social statuses, which largely determine the way interaction takes place (Bourdieu 1983; 1985).

Formalist and structuralist approaches, on the other hand, forget the symbolic structures and their detachment from the social structures that generate them. Thus, the concept of field, in a way, replaces the concept of system and the traditional system theory analysis (Bourdieu 1987b).

To Bourdieu, the field is above all a system of social positions built up and being built up in the Giddensian manner. The positions are occupied and manipulated by social agents which can be individuals, groups, or institutions (Bourdieu 1983).

The foundations of Bourdieu's concept of field can be found in Weber's writings concerning the sociology of religion. But while Weber dealt with priests and prophets as types, Bourdieu is interested in how these types (positions) and agents are related to each other (Bourdieu 1985, 17; Broady 1989, 36). Bourdieu describes this as follows (Bourdieu 1987c, 121):

> "Any analysis of the logic of the interactions that may develop between agents in direct confrontation with one another must be subordinated to the construction of the structure of objective relations between the positions these agents occupy in the (religious) field, a structure that determines both the form their interactions may assume and the representation they may have of these interactions. [...] It is only by constructing the (religious) field as the set of all the objective relations between positions that we can arrive at the principle which explains the direct interactions between social agents and the strategies they may employ against each other."

Bourdieu usually compares the social field to a magnetic field. Like a magnet, the social field has an influence on those within its limits, an influence whose source is usually unknown and, in a way, mysterious.

The social field is a scene of ongoing struggle for power and the field, in fact, determines what the struggle is about: the possession of the capital typical of the field, the control over the "products" of the field, the various symbolic victories in the field, the most valued positions in the field.

The reciprocal definitions of the field and the capital is said to lead to tautology. Bourdieu speaks about a hermeneutical circle:

> "... in order to construct the field, one must identify the forms of specific capital that operate within it, and to construct the forms of specific capital one must know the field." (Bourdieu 1989, 7)

The concept of field is more methodological and heuristic than theoretical. The field is constructed in order to be able to view higher education and the academic production process not as such, but in relation to something. Only after thoroughly examining something can one say whether it is a field or not. In fact, one central feature of the field is the ongoing battle on the existence of the field itself and its limits (Bourdieu 1989,6).

Thus, the fields are not "given" as such in the social reality, but they have to be "constructed". Broady (1989, 41) expresses this as follows: "All social relationships are not fields in the Bourdieuan manner. A field is created when people struggle about symbolic or material capital that are common to them". The basis for the formation of the field lies in the agents' mutual interests that are related to the struggle over the capitals and the supremacy in the field.

Bourdieu's aim, however, seems to be to shift from the heuristic field concept to a "general field theory". It means that economic theory, for instance, loses its position as a kind of basic theory and becomes just one special case within field theory; the field of economic production is thus placed side by side with the field of academic production, and the field of higher education has its own "economics". Academic production partly follows the general logic of economic production, but it has partly also its own laws (Bourdieu 1983, 317; 1985, 20).

3. The Analysis of Higher Education as a Field

The field of higher education consists of various disciplines - "lines" - that, on one hand, are recruitment systems to different other fields, especially the fields of power, and on the other hand, education and reproduction strategies for different social classes (cf. Palme 1989).

Earlier, relative autonomy was said to be a central characteristic or precondition of a field. Relative autonomy in the field of science indicates, for instance, authority to determine the contents of degree requirements and to assess research activities. Autonomy also means that the field is able to transform problems and pressures from outside to suit its own logic of activity, to translate them into its own language. Between disciplines this means that one cannot become a philosopher with the academic capital of a geographer (Bourdieu 1987a, 105).

Thus, as a field, higher education includes subordinate fields, and the most important of them are the fields of the disciplines. The disciplines, in turn, have different appreciation in society.

Another important subdivision takes place according to the institutional structure of higher education. This again is, in Finland, linked with regional development policies.

Since the 1960's the expansion of higher education in Finland has been linked with strong regional interests. The quantitative growth has, in fact, meant decentralization and regional expansion. While as late as in 1960 three quarters of all university students were enrolled at the universities around the capital, Helsinki, by the end of the 1980's their share had gone down to two fifths (Education in Finland 1991). The activity of the various provinces - sometimes there has even been a fight for new universities and faculties - indicates a belief in the significance of the university as a regional development factor. In offering study places to young people from the surrounding area, a regional university is believed to secure the supply of highly educated labour, to make research and expert services available in the area, as well as to develop the cultural life and increase the status of the area in every respect (Numminen 1987, 38).

Although Finland has taken the lead in Europe in the relative number of university type higher education units, the proportion of students in the population is near the European average. The problem of the Finnish university institution is, in fact, the small size of the units. It can be asked if "the gathering of human capital" has been too much pursued at the expense of "the critical mass", i.e. at the expense of the development of scientific basic research that presupposes sufficiently large and efficient units (Kivinen et al 1989, 67).

Figure 1 shows the regional distribution of higher education at the beginning of the 1990's. It shows the distribution of educational sectors by provinces. The figure after the name of the educational sector gives the number of study programmes. Furthermore, the distribution of university students by provinces in 1987 is given. The educational sector of psychology is included in social sciences, and the sectors of public health administration and pharmacy are included in medicine.

It can be seen in Figure 1 that despite the regional expansion, higher education - measured with the number of students - is still strongly concentrated in the south of Finland. Though Helsinki has lost its hegemony, still nearly one half of the students is enrolled at the universities in the Helsinki area, and 72% of the students study in the Provinces of Uusimaa, Turku and Pori, and Häme.

Theology, agriculture and forestry, arts, law (with the exception of the University of Lapland), and technology (with the exception of the University of Oulu) are the educational sectors that are the most strongly concentrated in the south of Finland. The most decentralized sectors of education include social sciences, humanities, and educational sciences which can be studied in nine provinces. Mathematics and natural sciences can be studied in seven provinces, medicine and economics in five provinces.

Contrary to the United States, for instance, the Finnish university institution is "comprehensive", i.e. education in different units has been standardized according to the degree regulations, the degrees have the same content in principle, they are extensive and also equally valuable. In practice, however, the university institution is

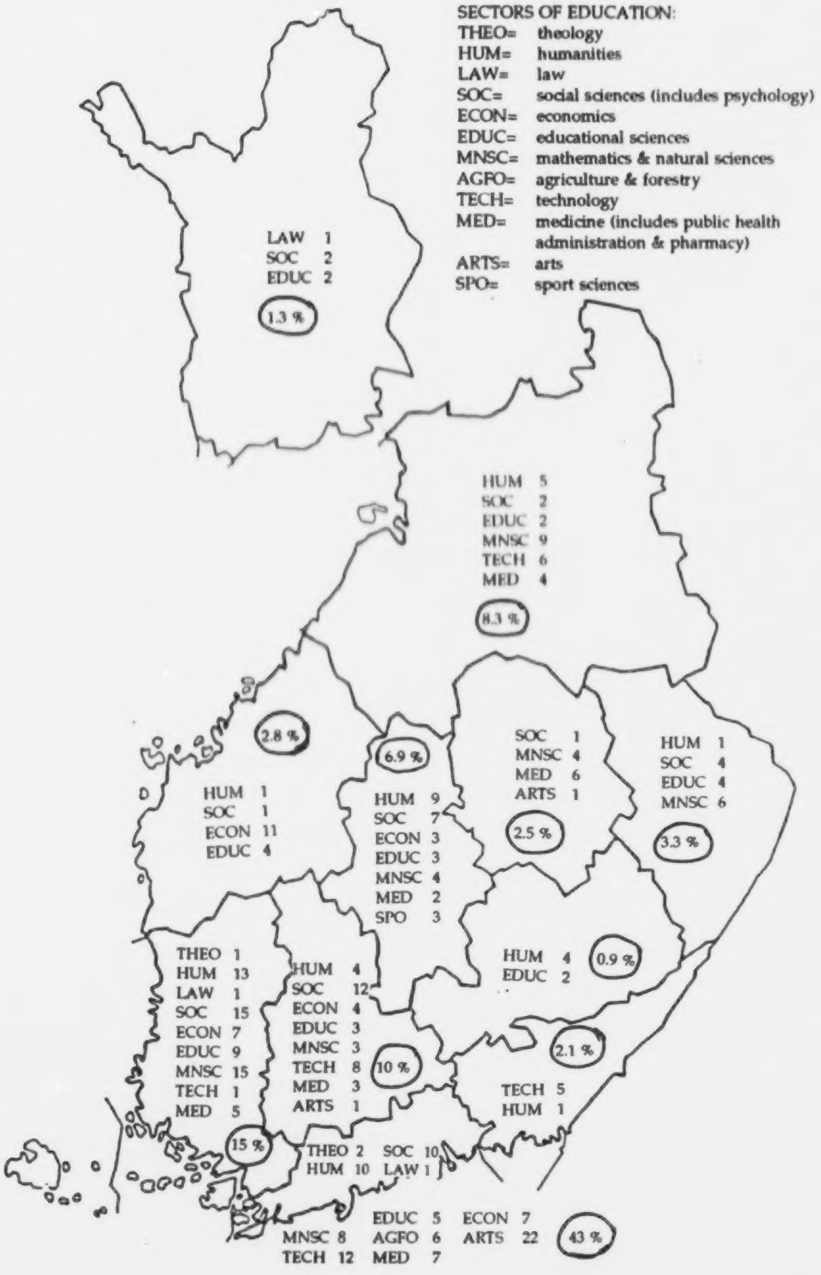
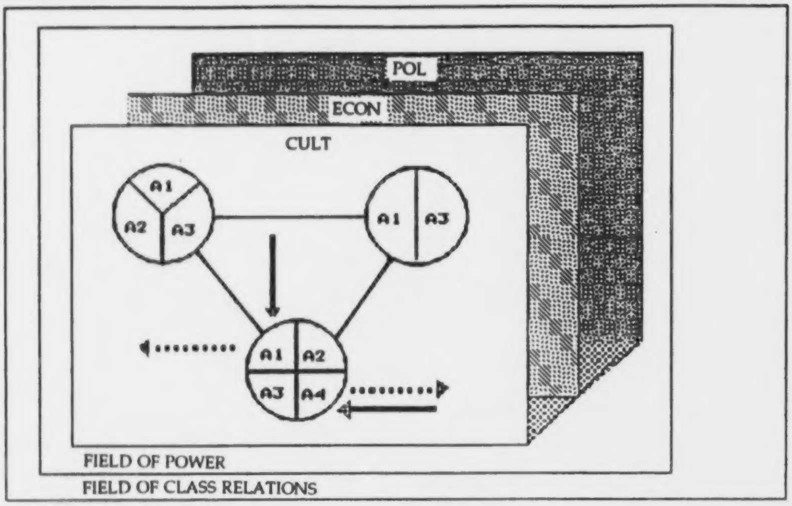

SECTORS OF EDUCATION:
THEO= theology
HUM= humanities
LAW= law
SOC= social sciences (includes psychology)
ECON= economics
EDUC= educational sciences
MNSC= mathematics & natural sciences
AGFO= agriculture & forestry
TECH= technology
MED= medicine (includes public health administration & pharmacy)
ARTS= arts
SPO= sport sciences
LAW 1
SOC 2
EDUC 2
1.3 %
HUM 5
SOC 2
EDUC 2
MNSC 9
TECH 6
MED 4
8.3 %
2.8 %
HUM 1
SOC 1
ECON 11
EDUC 4
6.9 %
HUM 9
SOC 7
ECON 3
EDUC 3
MNSC 4
MED 2
SPO 3
SOC 1
MNSC 4
MED 6
ARTS 1
2.5 %
HUM 1
SOC 4
EDUC 4
MNSC 6
3.3 %
HUM 4
EDUC 2
0.9 %
THEO 1
HUM 13
LAW 1
SOC 15
ECON 7
EDUC 9
MNSC 15
TECH 1
MED 5
15 %
HUM 4
SOC 12
ECON 4
EDUC 3
MNSC 3
TECH 8
MED 3
ARTS 1
10 %
2.1 %
TECH 5
HUM 1
THEO 2
HUM 10
SOC 10
LAW 1
EDUC 5
AGFO 6
MED 7
ECON 7
ARTS 22
MNSC 8
TECH 12
43 %

Figure 1. *The regional distribution of higher education: the number of study programmes by educational sector at the universities in each province and the number of students in each province (percentage of all university students; figure in circle).*

divided into "good" and "poor", "valued" and "less valued" units and educational sectors. Let alone the fact that some units are situated in the centre and some in the periphery can give the education different emphasis.

Figure 2 is an analytic description of the characteristics of the field of higher education. In the construction of a field, it is essential how the structures of area, science and educational sector, capitals (especially the academic capital typical of the field of higher education), agents (students and teachers) as well as processes (recruitment and selection) become distinguishable and distinctive from each other and how this is determined by the factors that link higher education with the other structures of society, especially stratum and class structures. As an example, the students and teachers of the Faculties of Law at the Universities of Helsinki, Turku, and Lapland try to improve their positions in the field. They are recruited with certain capital and selected in the hierarchical positions of the field of higher education and other social fields.



1) STRUCTURAL FACTORS: A1-A4 = EDUCATIONAL SECTORS
—— = STRUCTURE OF AREA

2) PROCESS FACTORS: ➔ = RECRUITMENT
••▶ = SELECTION

3) AGENTS: STUDENTS AND TEACHERS
4) LINKS: OTHER FIELDS AND THE RELATIONS BETWEEN FIELDS AND AGENTS

ECON= THE FIELD OF ECONOMY
POL= THE FIELD OF POLITICS
CULT= THE FIELD OF CULTURE

Figure 2. *Some characteristics of the field of higher education*

So, there are different markets in these fields: markets arise when something is "put on sale". To take an example, a market of language is created when someone makes a discourse trying to attain linguistic profit (Bourdieu 1987a, 112). Research is brought to the market of science, for instance, and this research must reach a certain level and value to become recognized and appreciated as scientific merit (see Broady 1989, 41). The market of language has a special position in the field of science as it is partly due to discourse that science becomes distinguishable and distinctive from other fields (see Bourdieu 1984).

As a whole the field of higher education, like other fields, is part of the more general field of power, use of power, and furthermore, part of the field of class relations, i.e. part of society and the reproduction of its class relations (Bourdieu 1983, 319). Since the 1960's the autonomy of the university institution as well as the traditional professor dominance have decreased as public interests are more and more strongly focused on the academic production process. At this moment, however, the demands for economy and efficiency are again increasing the autonomy of the universities, at least in certain respects (Kivinen et al. 1989, 95).

4. Positions

The professorship is the leading position in the field of higher education. In Finland, a professor is an undisputed expert in his/her own discipline and his/her power is extensive and, to a great extent, unofficial and invisible. But it can be felt - like the magnetic pull especially by the student in the process of becoming academically qualified.

In 1950, the number of professors was 341, ten years later it was 477 and in 1970 already 1060. In 1989 there were 1802 professors, about a quarter of the whole teaching staff. Since the 1950's also the structure of posts has changed considerably as the number of assistants and non-tenured part-time teachers has greatly increased (see Marin 1977). The differentiation of the academic division of labour, on the other hand, means the development of clearly-cut careers.

To fill a professorship is a complicated and often a lengthy process where the main part is played by the "peer-group" expert assessment and the collegial decision-making by the faculty. The qualification requirements for a professor are described extensively and in detail in law (SA 721/1988) although attention is often drawn to the fact that a professor does not necessarily have to be a doctor. The final guarantee for a professor's authority and independence is the fact that he/she is appointed by the president of Finland.

Figure 3 presents the social background of the professoriate (N=183) at the University of Helsinki in 1988 compared with the social structure of the whole population in 1960 (when the present professors were on average 25 years old). It can be seen in the figure that the offspring of teachers - professors in particular - clergymen, and physicians became professors relatively often. The under-representation of professors from working class background is also obvious.

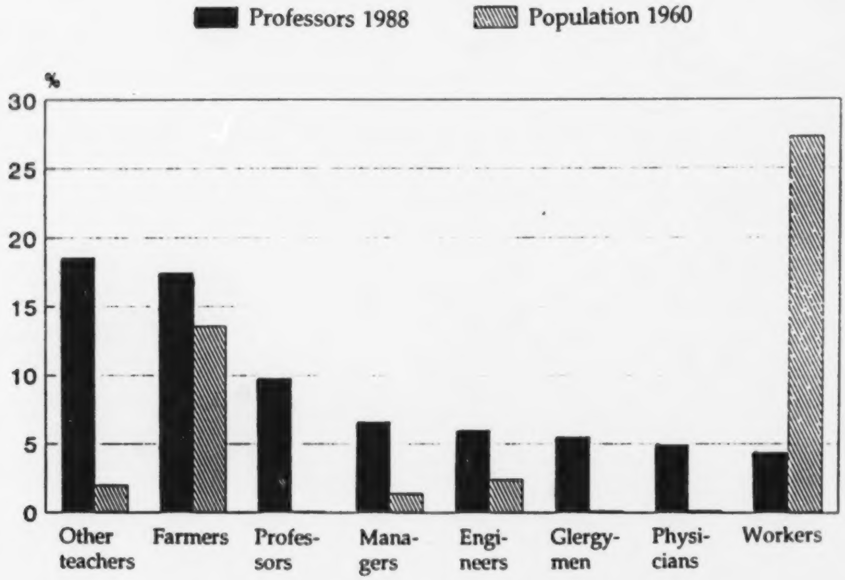


Figure 3. *The social background of the professors at the University of Helsinki in 1988.*

Of the 183 professors in this study, only eight were classified as having a working class background although the classification here, too, was "stretched" towards the group of lower clerical employees. Four of these eight professors worked in the Faculty of Mathematics and Natural Sciences and their fathers were a storeman, a toolmaker, a railway guard, and a ticket collector.

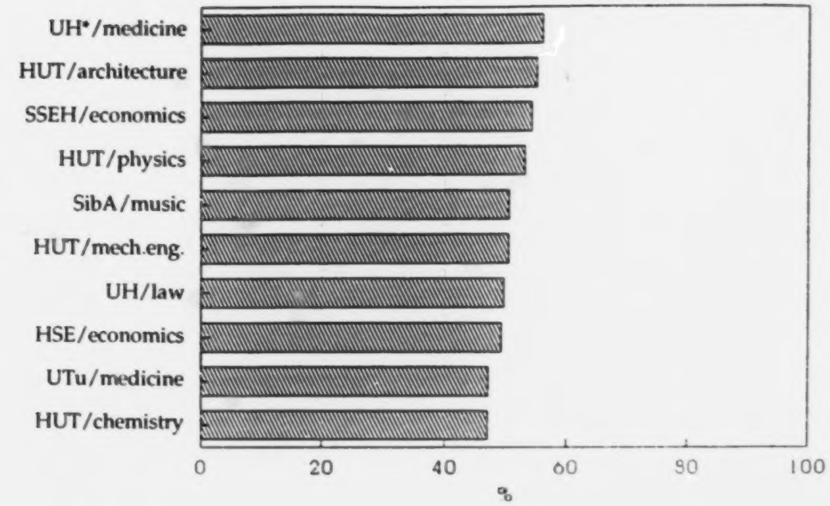
This example concerns the University of Helsinki but there is no reason to doubt that the situation would be essentially different elsewhere. The selection into the professoriate takes place from the top-most strata of society, especially from the cultural elite and among those professions that higher education traditionally generates.

The social background of university students is also "biased", on the whole, but varies considerably according to the university and the educational sector. The offspring of upper clerical employees are particularly well represented at the Swedish-speaking School of Economics, at the Helsinki School of Economics and Business Administration, at the Helsinki University of Technology, at the Sibelius Academy, and at the College of Veterinary Medicine (Isoaho et al. 1990). Figure 4 shows the ten educational sectors with the largest number of students with upper clerical employee background and Figure 5 shows the ten educational sectors with the largest number of students with working class background. The figures show that social recruitment is influenced both by region and by educational sector (cf. Isoaho et al. 1990; Kivinen & Rinne 1990).

As the student population is, however, considerably more middle class than the professoriate, the traditional harmony of habitus has eroded or is, at least, being eroded. The differentiation of the cultural capitals of the students and the teaching staff lay, in part, behind the university crises during the 1960's and the 1970's (cf. Swartz 1977).

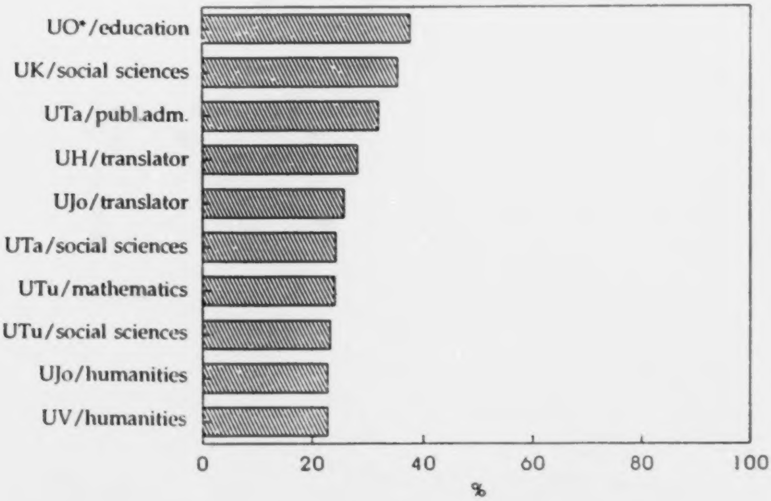
The position of the students in the field of higher education is a more complex problem. Only a fraction of them becomes professors. The majority take up positions in other fields of society, still mainly in high and important positions. Apart from the fact that students act within the official curriculum and learn different things, the position of students is determined by the hidden curriculum which can be characterized as an academic qualification process. In this process, the student turns into an expert through strictly controlled official and unofficial rites and is finally qualified to compete about the position of a professor.

The position of the students is, on one hand, determined by the stages of the academic qualification process; old and new students, degree students, post-graduate students, etc, and on the other hand, in relation with other academic positions. Especially post-graduate students - whom the academic qualification process mainly concerns as they are the potential applicants for future professorships - are generally students or assistants to a certain professor, or other members of the teaching or research staff at the university - in a way official post-graduate students, or they are so-called outsiders.



* UH = University of Helsinki, HUT = Helsinki University of Technology, SSEH = Swedish School of Economics in Helsinki, SibA = Sibelius Academy, HSE = Helsinki School of Economics, UTu = University of Turku

Figure 4. *The educational sectors with the greatest number of students with clerical employee background in Finland.*



* UO = University of Oulu, UK = University of Kuopio, UTa = University of Tampere, UJo = University of Joensuu, UV = University of Vaasa; others: see Table 4 above

Figure 5. *The educational sectors with the greatest number of students with working class background in Finland.*

5. ... and Capitals

The specific capitals of the field of higher education are made up of academic degrees on one hand and scientific expertise on the other hand. There are two dimensions of power linked with these capitals and their use dividing the field of science (Bourdieu 1988). Bourdieu speaks about a specific academic power which is power in the reproduction processes within the power structures of science. In particular, this is power to make decision about the filling of the positions in the field. The other dimension of power is constituted of scientific power which is power in the reproduction process of scientific knowledge generation. In particular, this is power to determine what the legitimate research areas within the field are and what is "real" research (Bourdieu 1988, 78-79).

> "In short, the arts and social science faculties are divided up according to the same principle which divides up the space of the faculties as whole: the opposition between the agents and institution which are oriented mostly towards research and scholarly goals or the intellectual field and specifically cultural goals, and those which are oriented more towards the reproduction of the cultural order and the body of reproducers, and towards the interests associated with the exercise of a temporal power within the cultural order." (Bourdieu 1988, 74)

Although the academic power is in France organized in a different way compared with Finland, Bourdieu's description of the division into science and administration sounds familiar also as regards our universities.

As regards students, the academic degree is, on one hand, an output of the educational system, institutionalized cultural capital in education. Higher education produces workforce with academic education. On the other hand, an academic degree is a formal qualification requirement in a hierarchical system. An academic degree is hard currency only in certain fields both in France and in Finland.

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PART II

INNOVATIONS FOR IMPROVEMENT

Research Process as a Paradigm for Teaching and Learning
- Experiences During Seminar Instruction

Pentti Hakkarainen & Kari Kuutti

1. Research and Instruction at Universities

One problem area in the development of Finnish university instruction is the integration of research and instruction carried out at the departments. A clear-cut and straightforward solution is to concentrate either on research or on instruction only at any given time. There is a tendency to avoid simultaneous research and instruction as instruction is felt to disturb the concentration on research. The contents of university instruction comes from research in the domain so, with respect to contents, it is not possible to detach instruction from research. One of the central goals of university instruction is to teach scientific thinking that is required in research.

The position of the university teacher has historically had two dimensions. According to ancient Greek and Roman traditions, the teacher was seen as the incarnation of knowledge. Personal interaction and dialogue with a knowledgeable teacher has led to the acquisition of knowledge by the student. At universities, however, knowledge has been gathered by a certain group of persons. Knowledge has, at the same time, become impersonal and abstract. Written texts have replaced vivid dialogues with the teacher. Knowledge is possessed by a professional group that has led its new members to knowledge. Already in the Middle Ages, an examination where the student was to show his attainment in a dialogue was seen as a test of his mastery of knowledge (Ong 1983).

These two approaches at medieval universities seem to co-exist even today. One part of studying involves learning of written texts and showing this acquired knowledge in tests and examinations. The tradition of dialogues and debates can be practised in seminars and in personal tutoring. In study programmes, the evaluation and application of acquired knowledge as well as the assessment of one's learning are seen as the educational tasks of seminars and the master's level thesis based on them (cf. Hakkarainen 1988). The framework of seminar work is usually constructed so that potential new insight is based on the individual contributions of each participant rather than on mutual efforts.

The role of the teacher as the traditional incarnation of knowledge and supervisor of scientific dialogue is emphasized in seminar instruction and in the supervision of the master's thesis that is usually an expanded version of the seminar paper. The attempt is to focus on the scientific research process as the object of learning through the students' own practice theses. The idea of seminar work is that the seminar group would work as a miniature scientific community. In many university seminars, there is an attempt to direct the activity of the seminar group by giving the participants roles in advance. Seminars are organized especially in order to teach research methods, research skills and scientific thinking.

Different opinions on what scientific thinking is and how it is learnt have a decisive impact on the planning and implementation of university instruction. The traditional implementation of instruction emphasizes the accumulated scientific knowledge and the transmission of that knowledge to students. Learning is motivated by means of examinations and degrees which help control the acquisition of scientific thinking. Another way of expressing the acquisition of scientific thinking is to apply knowledge to some assignments or to solve practical problems.

Traditional university instruction emphasizes the significance of scientific knowledge possessed by the teacher. The starting point for instruction is to transmit the basics of the discipline in question and to apply that to students' work. Studying is not focused on the generation of new knowledge but on the acquisition of basic skills which can possibly be of assistance later on in independent creative work. On the basis of this basic idea, instruction usually proceeds as Figure 1 shows.

An approach that emphasizes the teaching of cognitive processes has become an alternative to the traditional transmission of knowledge. In teaching scientific thinking the focus is on the importance of the student's own initiative. Perception of problems, independent acquisition of knowledge, and problem solving are essential elements of active learning. To meet these requirements, the student must develop his/her self-reflection, as well as structure and generalize knowledge. Since scientific knowledge is closely linked with the activities of scientific communities, the student must also possess certain social skills.

The emphasis on cognitive skills and processes often leads to emphasis on formal skills. Scientific thinking is a sum of various skills and processes. The teaching of thinking skills detached from contents is, in a way, a continuation of the traditional

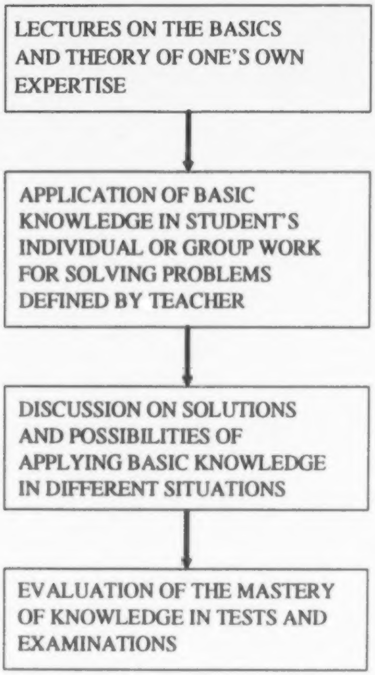
LECTURES ON THE BASICS AND THEORY OF ONE'S OWN EXPERTISE
APPLICATION OF BASIC KNOWLEDGE IN STUDENT'S INDIVIDUAL OR GROUP WORK FOR SOLVING PROBLEMS DEFINED BY TEACHER
DISCUSSION ON SOLUTIONS AND POSSIBILITIES OF APPLYING BASIC KNOWLEDGE IN DIFFERENT SITUATIONS
EVALUATION OF THE MASTERY OF KNOWLEDGE IN TESTS AND EXAMINATIONS

Figure 1. *Traditional didactic structure of university instruction and learning.*

transmission of available knowledge. The student must learn formal skills instead of crystallized concepts. The teaching of formal skills is, however, linked with an attempt to derive broader generalizations than in the teaching of abstract concepts.

Scientific theoretical thinking must be anchored to reality in some way. Explaining and generating the development of concrete phenomena give a meaningful link to reality. A genuine theoretical concept reveals the underlying reasons for change and development behind visible phenomena. Empirical concepts are capable of describing and explaining only observable phenomena. A historical perspective is necessary when forming theoretical concepts. Genuine theoretical concepts cannot be formed only by describing the present status of a phenomenon.

The theoretical concepts that explain the development of phenomena in a discipline are results of research. Latour (1987) illustrates in his work how facts that are reported as research findings are closely connected to their context of origin and how scientific knowledge is a result of the efforts of a broad collective community.

Traditional instruction which focuses on the transmission of "given" knowledge concentrates on results and strips facts off the context that is necessary for understanding. The process that has generated theoretical concepts is essential in learning them. Davydov (1972) emphasized that the generation process of genuine theoretical concepts must be reconstructed in learning situations if the students are to learn them. Thus, the learning of theoretical concepts generated by science means that the research process should be reconstructed in a learning situation. This does not mean to say that the research process would be the best learning situation. Learning situations should repeat the logic of research processes and focus on it.

When the research process is emphasized as the didactic starting point of university instruction it changes the progress of instruction. The following figure describes the didactic structure of this kind of instruction:

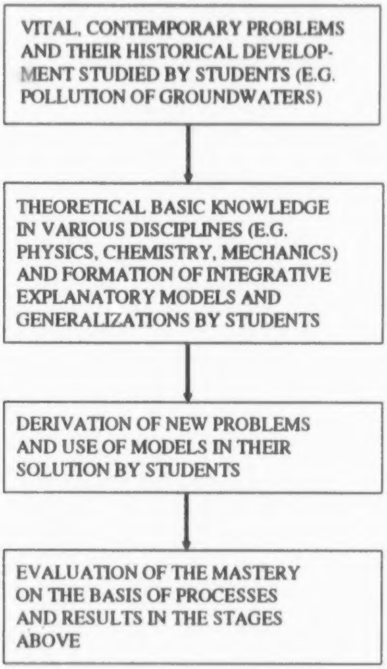
VITAL, CONTEMPORARY PROBLEMS AND THEIR HISTORICAL DEVELOPMENT STUDIED BY STUDENTS (E.G. POLLUTION OF GROUNDWATERS)
THEORETICAL BASIC KNOWLEDGE IN VARIOUS DISCIPLINES (E.G. PHYSICS, CHEMISTRY, MECHANICS) AND FORMATION OF INTEGRATIVE EXPLANATORY MODELS AND GENERALIZATIONS BY STUDENTS
DERIVATION OF NEW PROBLEMS AND USE OF MODELS IN THEIR SOLUTION BY STUDENTS
EVALUATION OF THE MASTERY ON THE BASIS OF PROCESSES AND RESULTS IN THE STAGES ABOVE

Figure 2. *Didactic structure of university instruction and learning based on research paradigm.*

Research paradigm as the starting point for instruction focuses the attention on the context and starting points of scientific knowledge, contrary to traditional transmission of factual knowledge. Setting practical problems as the starting point for the teaching-learning process can create a fruitful tension in the acquisition of theoretical ideas. Having a problem field that crosses the traditional boundaries between disciplines as a starting point forces the students to consider the relationships between concepts in various disciplines.

Theoretical contents cannot be "given" in teaching and learning that progresses according to the research paradigm. The concepts and theoretical basic knowledge must be adjusted to practical problems and phenomena. On the other hand, the ways various disciplines explain the same phenomena can deviate from each other. These differences and tensions present a new kind of challenge for learning. The adjustment of knowledge to reality and competing explanations generate a need for expansive learning (Engeström 1987) which is a prerequisite for scientific creativity.

A research process is not always ideal as a teaching and learning situation as the logic of research cannot be taken as the object for examination in the same way as in learning situations. To be able to reconstruct the birth process of concepts, we must expand the time perspective and examine historical changes of the concepts. Scientific theoretical concepts also change constantly. Therefore, it is necessary to analyse the historical predecessors of the present theoretical concepts to be able to develop them.

Any teaching and learning that attempt to reveal the birth process of theoretical knowledge must view the generation of new knowledge from a broader point of view than just as a technique for acquiring or absorbing knowledge. New theoretical knowledge is produced by collective activity systems (Engeström 1987). Learning situations that aim at genuine theoretical generalizations should reconstruct the activities of this kind of activity system. Reconstruction of the activity systems of science has been used in research on science but the idea of reconstruction seems odd in the planning and implementation of instruction. In learning situations it would seem to be particularly odd to reconstruct the social subject of scientific activities although the form of seminar work, for instance, would suggest expansion of the subject of the activities (cf. Hakkarainen 1988).

Especially the reconstruction of the subject of research in learning situations presupposes new kind of planning and implementation of group and seminar work. The subject that is reconstructed in a teaching situation is not, however, the subject of research proper, but rather a kind of quasisubject. The task of reconstructing the subject of research in learning situations resembles the task presented in simulation games.

Experiences from simulation games can be utilized in the planning and implementation of teaching.

2. Simulation of Research Process in Instruction

The symbolic interaction between the subject and the object is a central feature in simulation. When starting the simulation, the subject does not exist yet, there is only a potential group as the subject. Also the object is holistic and unstructured. The object is replaced by a cognitive model and, in this sense, we can talk about a quasiobject. Moving to the level of cognitive models gives an opportunity to repeat and reproduce the same symbolic action or process. This opportunity shows that imitation can be very close to experimentation (Zigun 1987).

The changing of the object into a quasiobject produces a similar change in the subject. The subject is divided into two: the real subject participates in the action and sees himself/herself as a real subject; on the other hand, there is a symbolic subject at the same time in simulation. This duality and division can be seen both in children's play and in adult games and simulation. The division plays an important role also in self-awareness and self-evaluation because the change of viewpoint makes it possible to observe oneself as if from outside. The division and the emergence of universal self to the action gave Rubinstein (1976) cause to claim that "I", in fact, means the same as "we".

If simulation games are examined from the point of view of reflexion, two levels can be distinguished: (i) ontological level, and (ii) reflexion at the level of proper simulation. The ontological level consists of the phase where the subject determines the object of imitation as well as the replacement of the real subject-object relationship with the symbolic quasisubject-quasiobject relationship. On the level of simulation, the relationships between the participants are seen as the most important factor. Relationships can be built up between individual participants or between various groups. (Zigun 1987).

The overall structure of adult simulation and innovation games can be described with the help of the structural model of activity which is presented in Figure 3.

In the description of adult simulation games it is noteworthy that the game is linked with the work process or research process which it was organized to serve. Simulation games are not independent in the proper meaning of the word just because of this link. Simulation games can be seen mainly as a means for producing new

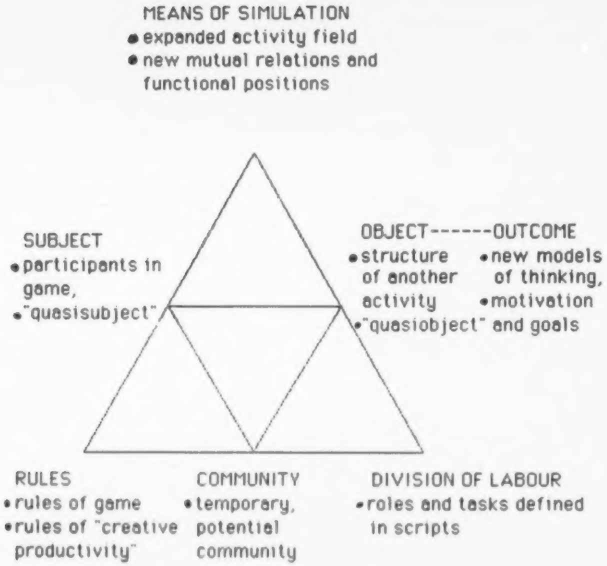
MEANS OF SIMULATION
• expanded activity field
• new mutual relations and functional positions
SUBJECT
• participants in game,
• "quasisubject"
OBJECT------OUTCOME
• structure of another activity
• "quasiobject"
• new models of thinking,
• motivation and goals
RULES
• rules of game
• rules of "creative productivity"
COMMUNITY
• temporary, potential community
DIVISION OF LABOUR
• roles and tasks defined in scripts

Figure 3. *Structure of simulation games*

models of thinking and new motives. When the game is organized as an instrument for developing some activity, its nature depends on how the development task is delimited.

The social atmosphere and the relationships between people in a work community, for instance, can be taken as the object for development, or simulation can focus on the solution of a technical production problem. In the simulation of research process, simulation can be regarded as an end in itself and the connection to the development of research can remain unclear. Students do not very often see it as their task to develop research in their field. Simulation can be delimited to the reconstruction of earlier research. Special attention should be paid to this task in the planning of instruction.

A simulation game comes to resemble reality in situations where the attempt is to outline a new methodological work process that aims at changing the paradigm. Simulation serves then as a means for producing something new so that the game is consciously used in searching new motives and new activity models. The targets of simulation are to be found in experimentation that is used in scientific research. An interesting difference between simulation and experimentation is that simulation seems to give an opportunity to test particularly the motives of a new activity model and the characteristics of a potential community. Simulation cannot, however, replace experimentation and other research, but it can be of assistance in developing new activity models.

3. Reconstruction of Research and Development on Human-Computer Interface in Seminar Instruction

3.1. Starting Point

In the spring of 1990 the Department of Computer Science at the University of Oulu carried out a seminar called "Perspectives in Human-Computer Interaction" where the idea of reconstructing the research process was utilized according to the above-mentioned guidelines. The seminar was planned and implemented by Dr L. Bannon from Dublin, Ireland, together with K. Kuutti from Finland, and it focused on the human-computer interface of data systems.

Those features of computer systems that are connected to the interaction between the user and the system are called interface. It can include various matters on various levels starting from technical basic ergonomics to cognitive models that the user - either consciously or unconsciously - forms about the system, or even further to the relationship between the system and the organization of existing work. The planning of interface aims at ensuring that the system is easy to use, efficient, and easy to learn. Research on human-computer interface seeks the principles by the help of which these goals could be achieved. Recent HCI research has utilized some research findings in psychology.

As the field is genuinely interdisciplinary, relatively young and develops quickly, the existing knowledge is rather disintegrated. It is difficult to get an overall view that would make it possible to assess the significance of various fragments of knowledge as well as their inter-relationships. Literature in the field is divided into two: scientific publications often concentrate on the empirical examination of details whose generalizability can be questioned. There are several partial theories on various levels but they are not connected to each other and they cover only a small part of the whole field. On the other hand, there are practical "cookery books" which present rules of thumb derived from practical experiences without any theoretical foundations. Forming an overall view was set as the goal for the seminar so that it would be possible to assess the significance of various factors in the development of interface on the basis of this overall view.

The didactic starting point of the seminar was to simulate the activities of a research community. Examining the historical progress of research and development on interface was designed to form an overall view of the field. Analysis of the historical progress aimed at understanding the dynamics of development. Therefore, the purpose was to go beyond the description of development to the underlying activities of the research community. The aim was to understand the scientific debate and dialogue in the research community at the turning points of research on interface and to simulate that in seminar work. In the planning of instruction the historic development of research on interface was outlined as in Figure 4.

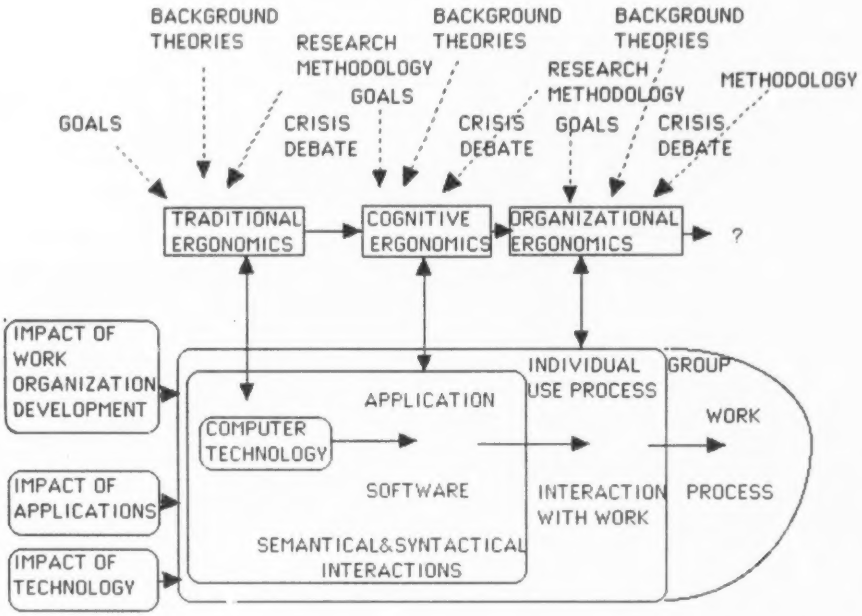
BACKGROUND THEORIES
RESEARCH METHODOLOGY
BACKGROUND THEORIES
BACKGROUND THEORIES
RESEARCH METHODOLOGY
METHODOLOGY
GOALS
GOALS
CRISIS DEBATE
CRISIS DEBATE
GOALS
CRISIS DEBATE
TRADITIONAL ERGONOMICS
COGNITIVE ERGONOMICS
ORGANIZATIONAL ERGONOMICS
?
IMPACT OF WORK ORGANIZATION DEVELOPMENT
IMPACT OF APPLICATIONS
IMPACT OF TECHNOLOGY
COMPUTER TECHNOLOGY
APPLICATION
SOFTWARE
SEMANTICAL&SYNTACTICAL INTERACTIONS
INDIVIDUAL USE PROCESS
INTERACTION WITH WORK
GROUP
WORK
PROCESS

Figure 4. *Model of the historical development of HCI research*

Seminar work was focused especially on crises at transitional stages and on debates linked with them.

3.2. Planning and Implementation

The organizers of the seminar developed a rough model or rather a group of models on the discipline and on the relationship between central phenomena in the discipline as the starting point for the planning of instruction. These models were not intended to be taught as such but the aim was rather to form a shared conception on what would be the result of a successful seminar. This development of shared models was very interesting as the views of the two organizers varied quite a lot on several points and a thorough discussion even on the foundations of reference sciences was necessary to be able to produce the models.

The following model on HCI was derived at the planning stage:

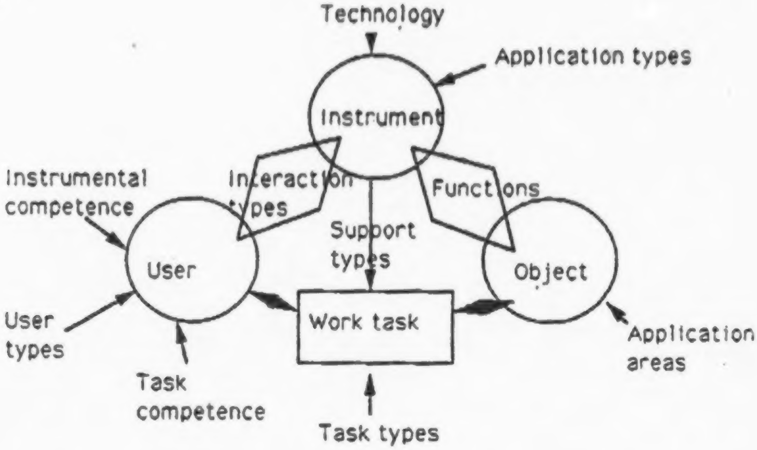
Technology
Application types
Instrument
Instrumental competence
Interaction types
Functions
Support types
User
Object
User types
Work task
Application areas
Task competence
Task types

Figure 5. *Model on interface as an intermediary between the subject and the object*

How to carry out the learning process so that the result would be the planned model or some even better model on the development of interface? The organizers found it easy to accept Davydov's (1986) ideas on the reconstruction of the development of scientific concepts in learning since one of the most important factors that gives rise to confusion in research on interface is the simultaneous existence of historical layers of various ages. It is difficult to fit the various layers together because of their different background problems and starting points. It was decided that the seminar would concentrate on the development of research in the discipline during the last 25 years. Approx. 40 articles that the organizers regarded as a good selection were chosen as the material for the seminar.

What about the simulation of the research process? The following characteristics were taken into account in the simulation of the activities of the research community:

- conscious development of thinking, reflexion
- development of dynamic collective subject
- orientation towards problem crystallizing and solving
- polyphony, several viewpoints
- public debate
- historical accumulation of knowledge
- models as instruments in generating and summarizing knowledge
- models as instruments for intercommunication

The reconstruction of HCI research attempted to follow the historical changes of research problems and to imitate the debates and discussions at the various phases of research in teaching situations. The articles that were given to the students as homework were chosen so that they would reflect, as well as possible, the changes in problem setting and the debates connected with each transitional period in HCI research. In the teaching situations, it was attempted to "construct" the students as quasisubjects who were supposed to have public debates on the problems of each transitional period.

The general didactic structure of the seminar can be described with the help of the figure 6.

Problems and articles were tackled in chronological order. In the beginning the problems were presented in Dr Bannon's introductory lectures but it was hoped that new problems would arise from the material as the seminar progressed. Public debates were organized so that the students were divided into groups which were each given the material that supported the viewpoint assigned to them. The students were supposed to defend their "own" approach as the solution to the problems that were presented. The results, problems, etc. were collected into,"common models" - large wall maps - that were used and supplemented during the whole course. The electric mail was also introduced as new form of interaction and a news group was established for the course. Furthermore, the seminar included two practical exercises for each group. The first involved practice on data collection techniques (on the use of data system). The second, more comprehensive exercise was hoped to indicate the formation of an

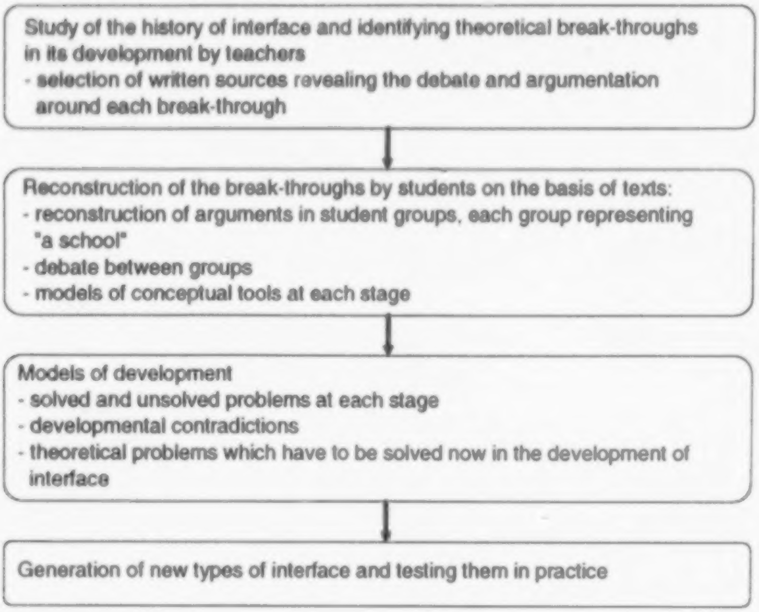
Study of the history of interface and identifying theoretical break-throughs in its development by teachers
- selection of written sources revealing the debate and argumentation around each break-through
Reconstruction of the break-throughs by students on the basis of texts:
- reconstruction of arguments in student groups, each group representing "a school"
- debate between groups
- models of conceptual tools at each stage
Models of development
- solved and unsolved problems at each stage
- developmental contradictions
- theoretical problems which have to be solved now in the development of interface
Generation of new types of interface and testing them in practice

Figure 6. *The general structure of a seminar aiming at the development of new types of interface in man-computer systems*

"overall view". The students had to choose relevant knowledge which would help to assess and improve some practical problem.

Approx. 40 students started the seminar but a great deal of them dropped out as they realized the amount of work the seminar would include. Almost all of the students that continued in the seminars were already working, at least part-time, and the students included also researchers from the State Technological Research Centre in Oulu. Twelve students completed the seminar.

3.3. Assessment

There were problems in implementing the seminar. Perhaps the biggest of them was the "ad-hoc" nature of the seminar: it was carried out outside the normal curriculum (the reason for this was the opportunity, to get an international researcher for a visiting lecturer). Because of this, too little time was spent on planning and it was done too late which resulted in lack of room, for instance (it was not possible to use only one lecture room). For the students, the seminar was a last minute addition to an already full-packed schedule. This weakness of planning was reflected in everything and it tended to encourage drifting towards the traditional lecture method. The leaders of the seminar did not fully agree, either, on how closely the implementation should be directed (tension between planning and "freedom in learning").

The use of English in a course that was so strongly based on communication proved to be problematic and the course would probably have worked much better in Finnish. The teaching target was too comprehensive. It would have been possible to carry out a narrower and clearly delimited subarea in a logical way. There was not time to reflect upon the inter-relationships of the broad material. The used articles were "too good": it would have been easier to demonstrate the differences between various viewpoints on the basis of more biased and delimited sources. This resulted in lack of time and skipping of material towards the end of the seminar. Teaching became teacher-centred towards the end. The seminar also included too many experiments with study forms. The use of electronic mail was, for instance, very interesting and gave rise to intensive discussions - on the other hand, as it was not closely planned it distracted attention and took a lot of time.

Despite the problems the seminar attained interesting results. Although the seminar proved to be unreasonably hard, the students participated with exceptional intensity and motivation. Also the teachers' motivation remained good and the instruction revealed one interesting feature: when planning the instruction it was noticed that not even teachers seemed to have a completely clear and unified view on some basic concepts in the field. These problems were discussed during the whole seminar and even after it, and the discussions led to a joint publication called "Some Confusions at the Interface - Re-conceptualizing the "Interface" Problem" (Kuutti & Bannon 1991). Thus, it can be said that at least in this case instruction and research were involved in a fruitful interaction which did not take place in one direction only.

The students who completed the course received a clearly useful overall view on the field and on its problems. This view did not, however, reach the level of models that was set as a goal. This is, at least partly, due to the fact that despite good intentions the seminar also drifted to teaching detailed techniques. The students felt that the form of this teaching experiment supported learning. A comment that was given at the end of the seminar illustrates this well: "The best thing in the seminar was that there was no need to "study" - what we learnt became a part of thinking by itself". It is also noteworthy that several participants became interested in the area so that there will be several Master's theses on it. The things learnt in the seminar could be directly applied to practice and in a couple of cases this led to changes in the HCI of commercial programmes.

3.4. Lesson Learnt

Despite its weaknesses the seminar was encouraging as a teaching experience - from time to time it felt like a real research project and not like a course. The use of two teachers was successful at least in this case. The contribution of the seminar leaders is, however, much more intensive compared with normal seminar practice. Planning in advance is extremely important and if the field is unstable, it may easily give rise to genuine research efforts (and difficulties resulting from them). It would be interesting to use the same teaching form within a more stable content area.

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Faculty Cultures and Innovations
- A Case Study

Jussi Välimaa

1. Introduction[1]

Research on cultural differences in higher education is a relatively new topic in European discussion. The rising popularity of cultural explanations can be related to the popularity the concept of culture has reached in the social sciences in recent years (Huber 1990 and Alvesson 1990). In the field of research into higher education, pressure towards more comprehensive means of explaining the life and functioning of the universities has also increased in the society outside the academic world. In many European countries more autonomy is given to universities, and governments have "stepped back" (cf. Van Vught 1989).

Very little analysis has, however, been made on the process which takes place inside a university when autonomy (flexibility and freedom) is increased during the strategy of self-regulation. Research on innovations in higher education has so far focused on analyzing prerequisites for the implementation and adoption of innovations in higher education (for an excellent analysis, see Van Vught 1989, 251-253), but questions concerning the environment of these innovations have not been raised. Consequently, research of this kind easily assumes that institutions of higher education are monolithic entities, which act in a mutually accepted rational way.

The problems of this "traditional" approach have been revealed by experimentation started at the University of Jyväskylä in 1989. During the experimentation more autonomy and freedom have been given to all levels of the university: teachers, departments and faculties. In principle, the experimentation offers the same kind of opportunity to improve the functions all those involved, but in practice this has not taken place. On the contrary, ways of using this kind of flexibility have been diverse and different. The different approaches of the faculties were surprising, because it was assumed that there would exist differences between individuals and departments, but not between the faculties. For this reason the faculties were dealt with in a similar way at the beginning of the experiment. The diversity in turn has raised the problem of how to explain the different results obtained in the 5 faculties of the University?

At first sight, this question seems to be a practical one, but it also has theoretical dimensions: what is the relationship between "reality" and "explanation of reality"? If we use the "traditional" models of analysis we easily abolish the dynamics of the academic communities, which in turn may lead to far too narrow explanations of the effects of innovations. When we take variety in academia as a starting point for the explanation of reality, we can discuss the use of disciplinary and faculty cultures as a basis for examining how the university functions. In this sense the experimentation as an element of the self-regulation strategy has given raise to a dialogue with research on innovations in higher education.

The dialogue between theoretical aspects and empirical data structures this study. We shall start with the building of a theoretical framework to explain and understand the functioning of university from a cultural view point. The introductory part is followed by a description of the experimentation started in the University of Jyväskylä, and the empirical part illustrates both the variety and the problems involved in explaining the variety through which the innovation is used. In the conclusion we will discuss the possibilities of a cultural view in explaining the implementation of innovation.[2]

2. Theoretical Background

The question 'what is culture?' can be, and has been, answered in a variety of ways. Kroeber and Kluckhorn have identified 164 definitions of culture (Aaltio-Marjosola 1991). We will not try to give yet another definition of the concept, but we try to explain how the concept of culture is dealt with in this study.

On the following pages it is assumed that culture has both a collective and an individual nature. Generally speaking, culture is understood as a "signifying system".[3] Hence concept 'culture' is treated as a context, which has to be described in order to analyze and interpret it. Culture is thus a kind of "a network of meanings" (cf. Geertz 1973, 4-20). The human capability in symbolizing things in turn puts the "network of meanings" in a continuous state of change both by producing new symbols and by giving new meanings to old ones.

A difficulty in cultural analysis in higher education rises from the fact that we are living inside the culture we are attempting to analyze. We have our own history in the present culture at the same time as the culture has its own history. Thus, quite easily our interpretation of culture tells more about ourselves than about the culture we are trying to describe. We share the description of cultural analysis as Geertz (1973, 20) puts it to be "guessing at meanings, assessing the guesses and drawing explanatory conclusions from the better guesses". Essentially, cultural analysis can be fruitfully applied as a hermeneutic tool in the analysis of the study of higher education as suggested by Huber (Huber 1990).[4]

2.1. Organizational Culture and University

The activities of organizations have also been explained from a cultural viewpoint.[5] In the seminal book of Edgar Schein (Schein 1988)[6] organizational culture is defined with two aspects. First, "without a group there can be no culture"; and second, it is important to know how "the individual intentions of the founders, leaders ... come to be a shared, consensually validated set of definitions" (Schein 1988, 50). In other words, to understand organizational culture we should find groups of people interacting with each other and with other groups. Secondly, essential for culture are the leaders who interpret the reality for their group (or community).

There are, however, some problems with the approach. Namely, what is an organization and what kind of effect does culture have in the organization? It seems that Schein treats the organization as a collection of mutually interacting groups, thus emphasizing the multicultural nature of the organization. An essential issue here is the role of leaders in the organization because they formulate the shared definitions of the reality for the group (or community). Anyhow, the approach is rather problematic when we are dealing with complex organizations, such as higher education institutions: Who are the leaders of higher education institutions? What are the groups like in higher education institutions? What kinds of organizations are the higher education institutions?

2.2. Levels of Academic Organizations

In the research into higher education there has been great interest in explaining the various ways in which the academic organizations function. Birnbaum has divided the models of higher education into four different schools of thought: structural, human resource, political and symbolic. Accordingly these schools treat the university as a bureaucracy, collegial system, political system and organized anarchy. Owing to Birnbaum "each of the models is "right", but each is incomplete." (Birnbaum 1989, 239-240). As a solution to the problem he creates a cybernetic model, a kind of self-regulative university, where the uniting tie between 'building blocks of subsystems' is based on the shared cultural background of the institution (Birnbaum 1989, 247).

In this study we rely mainly on the collegial model developed by Burton R. Clark (1983, 207) to increase our understanding of the complexity of academic organizations. To start with the levels of authority, Clark divides them into 1) the understructure (essentially disciplinary level); 2) the middle structure (enterprise level); and 3) the superstructure, or system level. In this study we are primarily interested in the understructure which "consists of the many operating units found within individual universities and colleges, including the larger ones at the level of faculties, schools, and subcolleges".

Becher and Kogan, on the other hand, have divided the higher education system into four levels: central level, institutional level, basic unit level and the level of individuals (Becher & Kogan 1991, 8-11).[7] The uniting tie between the previous models can be found from the relationship between "invisible" values and practical acts and tasks. Clark uses variables of discipline and administration in his matrix, whereas Becher and Kogan point to the meaning of values and operations. Both the methods of analysis described here emphasize that values vary also at different levels of the higher education system (Becher & Kogan 1991, Clark 1983).[8]

In other words, the matrix structures help to clarify the fields of academic activities at different levels of the system, and between the different tasks of administration and discipline (Clark 1983, 30-34). In addition, as Clark and others have noted, the structure of higher education institutions resembles a craft or guild more than a bureaucracy. Consequently, if we treat the organizations as organized forms of collective behaviour, as Van Vught and Westerheijden put it *"a successful conscious effort to bring about collective behaviour"* (italics by the author) (Van Vught & Westerheijden 1991, 30), we become more interested in the ways the organization functions and less in the bureaucratic models of organizations. This in turn leads to considerations of the academic working communities, and especially the basic operating units of academic activities. Clark uses the term "operating basic unit" to describe the nature of academic activities. Consequently, the basic operating units are "dominated by the personal, collegial and oligarchical arrangements agreed by the academics themselves to use in such crucial activities as research, teaching, hiring personnel, and evaluating students" (Clark 1983, 206). Becher and Kogan emphasize that the basic operating units can be different and they can vary according to the task at hand, too (Becher & Kogan 1991, 8-11). In Finland, concerning teaching the responsible basic unit covers the field from individual teachers to the entire faculty. In research activities the responsible operating basic unit can be a researcher or a group of scientists from several universities all over the world. In administration the basic unit is either a department or a faculty (Hölttä 1991, 67-69). Furthermore, an essential distinction is to separate the operating basic unit from the basic unit for analysis. In this paper we are interested in the decision-making basic units.

The issue that has not been thoroughly examined so far, is how these basic operating units act in different disciplinary contexts; in other words, are there discipline-based differences in the functioning of academic communities? As stated above, Birnbaum assumes that all the cybernetic systems have "a culture that establishes expectations and limits of behaviour" (Birnbaum 1989, 247). Before the expansion of research on organizational cultures Arthur Levine used the term personality to describe the nature of organizations: "organizations guard their personalities" with the help of the tools called boundaries -"symbolic set of parentheses which control an organization's social space" (Levine 1980, 11-12). In Becher's (1989) terminology the same phenomena could be expressed as academic tribes with their own cultures (personality) and disciplinary differences (boundaries) to make the distinction to other tribes. Valuable for this study is the notion that the disciplinary basis is an essential element of the identity of the academics. In this sense the discipline as both the community of knowledge and the community of scientists reaches new dimensions (Becher 1989).

In the research of cultures, in this case, the academic culture, the essential question is how to make the distinction - how to find the boundaries separating different communities from each other? The practical and methodological solution also in this study is to compare different communities with each other, and through comparison analyze the differences in their cultural background. But how to go about finding the communities?

2.3. Faculty Cultures

Tony Becher has developed further the concept of disciplinary culture to examine and describe the relationship between people and ideas in the academic world (Becher 1989, see also Becher 1990).[9] Owing to Becher the following basic dimensions can be found:

hard vs. soft, and pure vs. applied in the cognitive realm; convergent vs. divergent, and urban vs. rural in the social dimensions of academics. Becher has noted that "these properties are not only relative rather than absolute, but that their attributions may change over time and space" (Becher 1989, 153). In spite of this notion the idea of disciplinary cultures stresses the unchangeable elements of the academic cosmos: the structures of knowledge.

In this study we are examining an innovation in a university. This aim has raised some problems in the use of disciplinary cultures as a hermeneutic tool to understand the differences taking place during the experimentation. Namely, in the current approaches to the cultures of academic communities, both the dynamics of human life and the limited possibilities of the environment are lacking. Similarly, it is problematic to treat the academic organizations as "organizations" which have a "shared concept of reality" and "leaders in the community interpret reality for the other members" (cf. Aaltio-Marjosola 1991, 20-44). These notions have shifted our attention from the static structures towards dynamic constellations of the academics, the academic working communities, which can consist of members from various operating basic units. Following this way of thinking, we have found the ideas of William G. Tierney (1991, 199-216) as a fruitful basis for advancing our problematics. As Tierney has suggested, it can be possible that faculty and institutional culture have more impact on the work of academics than the international disciplinary tradition they belong to.[10] Especially when analyzing an innovation in a certain time and place, it seems to be a fruitful hypothesis to assume that local conditions have more impact on the use of innovation than the disciplinary structures. When analyzing the use of innovation it is more than probable that knowledge is "a social product with political roots" as Tierney puts it (Tierney 1991, 204). We start with the notion that the faculties of the University of Jyväskylä form academic working communities, which make decisions concerning the use of the innovation.[11]

Supporting evidence can be found in the research on innovations in higher education. Namely, Levine defines innovation in a fruitfully contradictional way by stating that "the key words to describe innovation might be new and different" (Levine 1980, 3-4). At the same time it is a relative phenomenon -"what is new in one place is old in the next" (Levine 1980, 4). Taking these contradictions (new vs. old, different vs. normal) as the basis of examination, we should be interested in the limits of time and place, the local conditions of innovations. Essential parts of the local environment are the tradition and history of institution as Henkel (1988, 179-181) has proposed. These elements are also, and this is the point we want to make here, elements of the "network of meanings" - the culture of institutions, and furthermore, the culture of academic working communities.

After the discussion concerning culture, academic organization and innovation, it is time to formulate the aims of the study. On the following pages we shall 1) test the fruitfulness of the hypothesis that the functioning of faculties can be understood assuming that they have a shared approach to the innovation. The shared approach will be called 'Faculty Culture'. By using the concept faculty culture we try to emphasize both the physical limits of the environment and the disciplinary basis as a part of their collective identity. At the operational level the question can be formulated as follows: 2) could the cultural approach be used to increase our understanding of the social and collective behaviour in the academic communities?

3. Innovation and its National Background

In the 1986 Law on the development of higher education and in the government decision connected with this law a new development strategy has been applied. The government decision on the development of the higher education system in 1988-91 included several items which defined not only the volume but also the actual strategy for the development of higher education (cf. Hölttä 1992, 229-233). It is important to note that while the State wanted to "step back" by giving universities more autonomy, the Law on the development of higher education currently secured the basic resources and the 15 percent annual growth of appropriations. This state of affairs has existed until 1990, after which there have been budget cuts also in the field of higher education.

Before the 1986 Law on the development of higher education, the activities of the universities were chiefly regulated by the state budget, because the appropriations were bound to strict sub-items and could only be used for the purpose ordained by the sub-item in the budget. For example, the payment of wages to university teachers was tightly regulated. In addition, it was the duty of a professor to lecture 140 hours a year, associate professors had to teach 186 hours and lecturers 392 or 448 hours a year, depending on the title. A separate decree made it possible to substitute part of the teaching load by seminar instruction, where two hours corresponded to one hour of lecture. The number of lecture hours of the assistants has not been defined precisely, but the regulation stated the maximum number of assistant's teaching hours per week in addition to his research work.

The innovation at University of Jyväskylä must be understood against this background. Thus the experiment is not a separate innovation project, instead, it is connected with the development strategy described by Van Vught as the strategy of self-regulation.[12] The present experiment also starts from the same liberal ideas, because it allows the university - at all of its levels - to determine the use of its greatest resource - work and work forms of the teachers. Why this is the greatest resource, can be seen by examining the university budget: in 1989 about 60 % of the budget consisted of salary expenses (see also Kivinen and Rinne 1991, 55). In addition, according to the data collected by the Central Statistical Office in 1983 all teachers with the exception of assistants used more time on teaching than on research (Central Statistical Office 1983, SVT XXXIII:7).

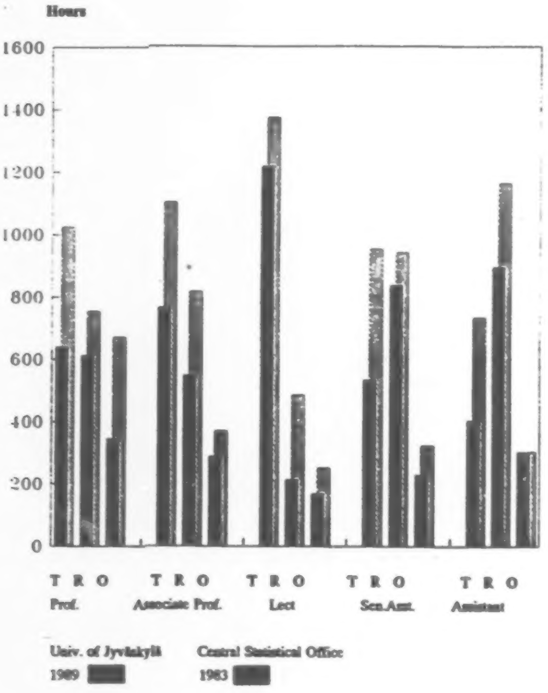

Figure 1. *Division of annual working time on different tasks in the work plans of those participating in the experiment at the University of Jyväskylä in 1989-90 and in the enquiry of the Central Statistical Office in 1983. T = teaching, R = Research and O = other tasks.*

On the other hand, Figure 1 shows that normally teachers' annual working time is more than 2 100 hours (from 2106 to 2449 hours). The number of 1600 hours (which is the limit of working time given in the work plans) reflects the division of "real" working hours. Consequently, the data of work plans can be used for further analysis keeping in mind that it reflects the proportion of real working hours, but it is not a description of them.

3.1. The Experimentation on Free Allocation of Teaching Resources as an Element of the Strategy of Self-regulation

The experiment of "free allocation of teaching resources" initiated by the Helsinki School of Economics and Business Administration (beginning on Aug 1,1988) and by the University of Jyväskylä (beginning on Aug 1,1989) were initiated from the basic concept that teachers' work no longer is defined in the form of given lecture hours, but instead in the form of total annual working time, which has been agreed to consist of approximately 1600 hours.

The most problematic dimension of the experimentation is related to the amount of 1600 hours, the total annual working time. The members of the collective bargaining negotiations group (representatives of the labour organizations) have told the researchers that this number of hours was agreed on, because some figure had to be given for the yearly work load. 1600 hours corresponds, for example, to the annual working time of a person who has served 10 years in a government post. What is interesting is that labour organizations insisted on this number of hours. The Ministry of Education had suggested a much more flexible definition of "an average working time of average civil servants".

At the state level the figure 1600 hours was a compromise, which made it possible to start the experiment, but after reaching the university its character changed: it became a problem. It was a problem to the university administration, mainly because the question was raised whether the annual 1600 hours should be controlled. No control mechanisms were started, but rather it was decided that the results of the experiment would be waited. For the faculties the 1600 hours was primarily a policy decision on what work tasks were to be included in the 1600 hours (annual work time). It was decided that the tasks would include teaching, research and other tasks, of which "other tasks" was a very loosely defined category. For the university teachers the 1600 hours were mainly a moral problem: Should I report only 1600 hours in my work plan, when in fact the real work time is much more? Mainly lecturers have not approved the fact that tasks in the work plans should be reported only up to the 1600 hour limit.

3.2. Innovation Strategy of the Experiment

An attempt has been made to keep the experiment as loosely organized as possible (Konttinen & Välimaa 1990a & 1990b). In this sense the experimentation has been organized according to the ideology of self-regulation. When we state that during experimentation the departments and faculties have been given flexibility, it means that the steering committee of the experimentation firmly believed that it is the only sensible way of introducing innovations to the university. Thus the steering group (nominated by the University board as "support and follow-up group") followed the ideology of the strategy of self-regulation without being conscious of the name of this policy.

It can be said the innovation strategy of the experiment starts from the assumption that responsibility for the planning and implementation of innovations is given to the faculties and departments. This kind of thinking was quite new at the University of Jyväskylä in comparison at least to the previous great reform of the university degrees, which was steered by the university administration as well as the Ministry of Education (Konttinen & Välimaa 1990c).

4. General Effects of the Innovation

During the experimentation differences have occurred both in the approach and in the adoption of the experimentation. Problems in explaining and interpreting the results rise from the fact that there are both similarities and differences: should we concentrate on the similarities or should we show the differences?

If we want to analyze the innovation results at the university level it easily seems that essentially similar trends and events can be found to describe the nature and effects of innovation. As an example of the analysis at the university level the teaching load of university teachers will be presented. (Figure 2.)

In comparing the present and earlier number of hours, it can be seen that the number of planned teaching hours of no teacher group has increased, but the decreases are also small. Decreases were about ten percent or less for the professors, associate professors and senior lecturers, but for junior lecturers and full-time non-tenured teachers the decrease is about one per cent.

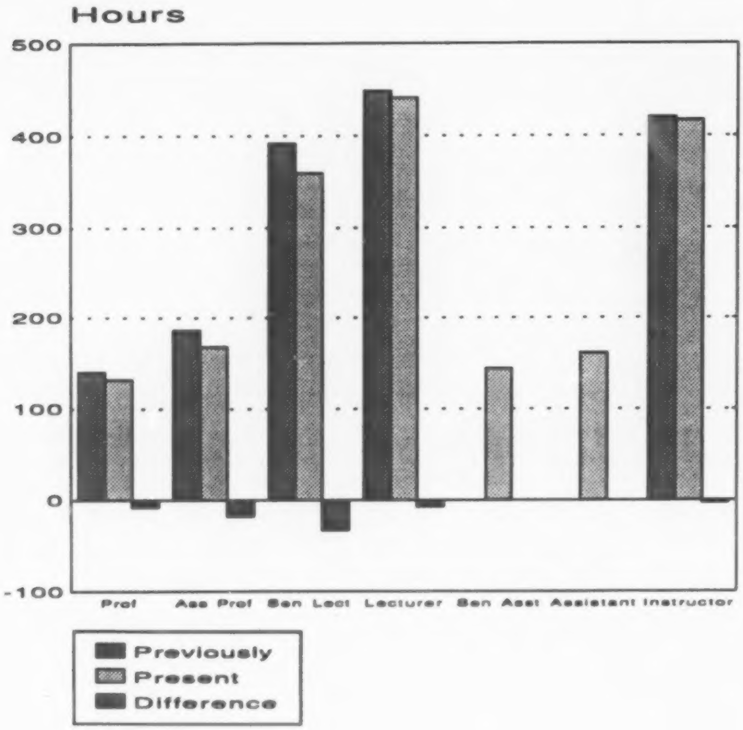

Figure 2. *Changes in the mean teaching load of university teachers during the first year of the experimentation, 1989-90.*

What about the various teacher groups, is there variety between the teachers? The figure below (Figure 3.) illustrates what has happened to different university teacher groups during the experimentation.

Figure 3 shows that there is no average decrease in the planned teaching load, not even in the various teacher groups. On the contrary it can be seen that considerable differences exist in all the groups. The most striking differences can be found in the group of lecturers. Before the experimentation they were treated as teaching staff with no socially or "legally" accepted right to do research. During the experimentation their position has changed and they have partly become research staff.

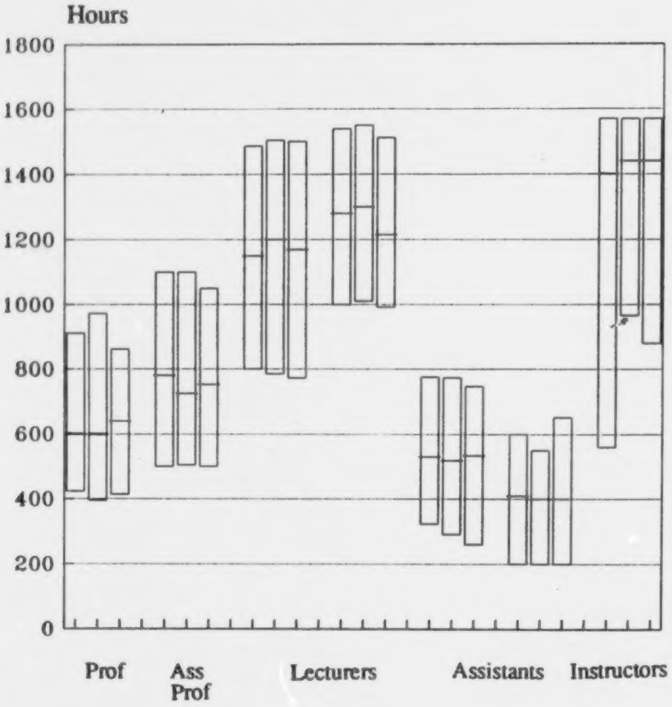

Figure 3. *Teaching load in various teacher groups during the experimentation. The left column represents teaching load during the academic year 1989-90, the middle column represents the academic year 1990-91 and the right column the estimates on the academic year 1991-92. The columns represent 80 percent of the teachers; the line points to the median of the teachers.*

When we analyze the time for research (Figure 4) it can be seen that 10% of the professors can use 50% of their time on research compared to the 10% of professors who can allocate only 200 hours for research. The same kind of differences can be found in all teacher groups.

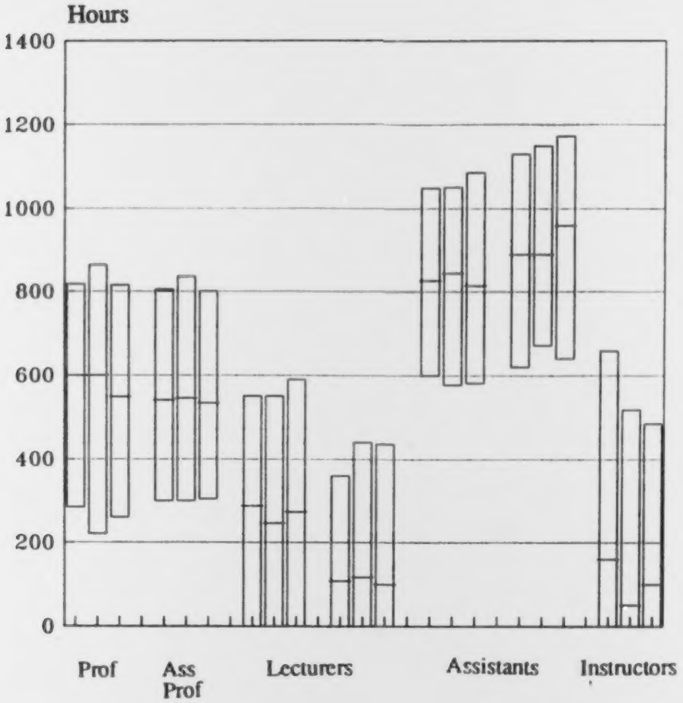

Figure 4. *Time for research in the various teacher groups during the experimentation. The left column represents research time during the academic year 1989-90, the middle column represents the academic year 1990-91 and the right column the estimates on the academic year 1991-92. The columns represents 80 percent of the teachers; the line points to the median of the teachers.*

On the basis of Figures 3 and 4 it can be stated that experimentation has not offered "average flexibility" to all the teachers. Instead, it has provided possibility to use flexibility at the departmental level if the teachers are able to negotiate with each other and agree on the use of flexibility.

5. Differences between the Activities in the Faculties

When analyzing the use of flexibility, we cannot find many clear answers neither through the analysis of all university teachers nor by examining different teacher groups. What is to be done? Problems of making general explanations like this at the university level are visible: they show that there are differences, but they don't help in understanding why there are differences. If, instead, we try to find processes affecting these differences, we should examine the differences between the ways of working i.e. the academic working communities. We continue with statistical presentations to illustrate the trends in the operations.

5.1. Allocation of Teaching Resources

When the results are examined in each faculty, one gets a clearer picture of the way different faculties allocate the annual (academic year 1989 - 90) work hours at their disposal (Figure 5). The columns show in per cents the division of work time into three main task groups. One hundred per cent in hours is the figure of faculty staff multiplied by 1600 hours. The left column thus shows how the work would have been divided into different tasks, if the departments had allocated the work time to different tasks according to the university average.

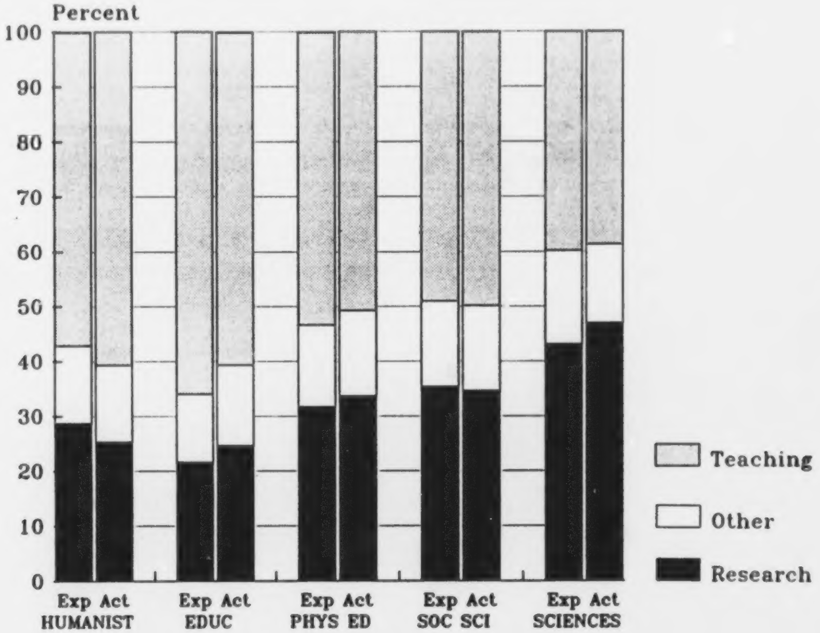

Figure 5. *Expected and actual allocation of teachers' time by the faculties at the University of Jyväskylä in 1989-90. Exp = expected Act = actual.*

Differences between faculties are caused by their staff structure, which may reflect the structural differences between the faculties. If a faculty has a great number of persons who generally give a lot of teaching (lecturers), the teaching volume of the faculty grows to a great extent. Two characteristics are connected with the staff structure of a faculty: firstly, it takes many years to change it and, secondly, when decisions are made on the staff structure, the weighting of tasks in the faculty between teaching and research is also determined. Thus the left-side columns can be thought to describe the long-term policy and tradition of the faculty.[13]

The figure indicates that there are no clear differences in the proportion of administrative and other tasks, because approximately 15 % of work time is allocated to them. Therefore the differences between faculties are based on the weighting of teaching and research. At the most, the difference is about 20 %. In other words, if working time was allocated in the same way as in the entire university, a difference would arise between the faculties already on the basis of the teacher structure, and its levelling would mean transferring every fifth teacher from research to teaching or vice versa.

In Figure 5 the right column describes the actual planned allocation of resources in each faculty, i.e. the allocation recorded in the work plans. The difference between the left and the right column reflects the amount of working time that has in the faculty departments been invested in teaching, research and other tasks differently from the general practice at the University of Jyväskylä. The differences between the assumed value and the planned one are, however, small, at the most about five per cent. Also the differences between the faculties in the weighting of research and teaching remained the same: for example, in the rating made according to the time used on research, the order of the faculties is the same in both columns. Although strategic allocation of resources does not change the weighting of the faculty's activity altogether, it is possible to draw some conclusions from the figures.

The staff structure of the Faculty of Science favours research, but still the faculty allocates its resources to research more than the other faculties of the university. This has happened in three ways: resources have been allocated to researcher training (research tasks for assistants; also funds for non-tenured teaching have been allocated to the same purpose), some tasks have been taken away from professors and from teaching and others have been directed to lecturers more clearly than in the other faculties of the university.

The effect of the strategic allocation of resources has been very small both in the Faculty of Sport and Health Sciences and in the Faculty of Social Sciences. Social scientists have stressed teaching a little more, whereas sport scientists have emphasized research. Humanists and educational scientists have approached each other; humanists by increasing teaching and educational scientists by increasing research.

5.2. Student-teacher Ratio

To connect the allocation of resources more into the reality of teachers we shall look closer at the ratio between students and teachers. It can be assumed that the student-teacher ratio has an essential influence also on the possibilities to allocate teaching in a flexible way.

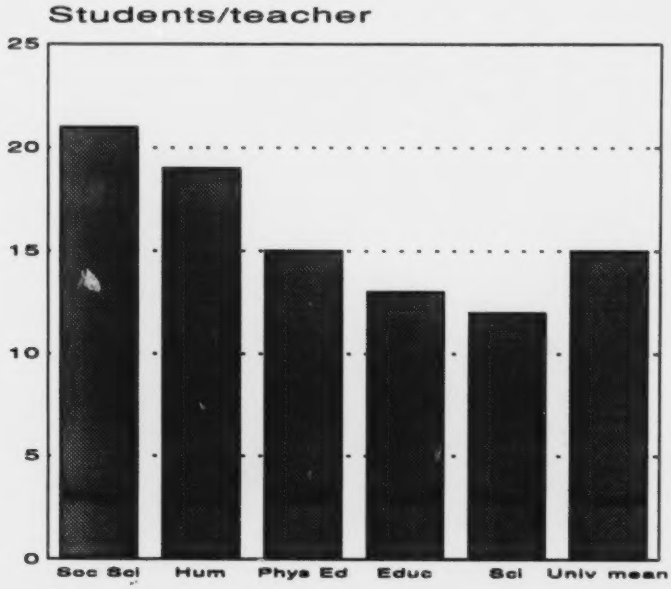

Figure 6. *Student-teacher ratio at the University of Jyväskylä. Source: Jyväskylän yliopiston toimintakertomus 1990.*

When analyzing Figure 6 it can be seen that in the faculty of natural sciences the ratio is lowest compared to other faculties. The fact could implicate that the faculty has the most possibilities (flexibility) also in allocating teaching resources to research. The same could be interpreted as to the faculty of education, even though the faculty of education is responsible for the "invisible" basic teaching for all students at the university.

When we compare Figure 5 to Figure 6 it seems natural that the two faculties (education and sciences) with the lowest ratio have been most able to allocate resources from teaching towards research. What is really surprising is the difference between the faculties of social sciences compared to the humanities. Both these faculties have the highest student-teacher ratio, but their policy in allocating resources is very different. Humanists have increased more the amount of teaching, whereas social scientist have decreased less their proportional time in research.

In the Free Allocation of Teaching Resources - experiment departments (and faculties) had been given an opportunity to change the structural division of resources. For example, lecturers could have been given research tasks without limitation and, correspondingly, professors could have been given more teaching duties than before. Although work resources could have been allocated freely, this was not done.

How to continue the research? Should we prepare more statistical presentations? The statistical analyses have already shown that there are differences between the politics of the faculties. This kind of statistical analysis does not, however, provide tools for understanding why these differences occur. This notion influenced our solution to resort to the qualitative methods in finding out the different kinds of intellectual and cultural backgrounds affecting the decisions made by academic working communities, i.e. the faculties.

5.3. The Answers of the Faculties to the University Rector

When starting with the presuppositions of the experimentation we asked what the various ways of understanding flexibility are? Differences in the attitudes and opinions towards innovation can be studied by interviewing academics, or by analyzing the concepts and expressions used by the faculties. In this study we are interested in the various ways the faculties officially describe the experimentation. Material for the analysis was collected from the letters sent by the faculties to the university rector at the beginning of the spring term 1991. Faculties in turn had written their answers on the basis of the answers given by the departments.

The background of the letter sent to the faculties was a deep concern at the present state of the experiment. According to the opinion of the steering committee it seemed that nothing at all had happened during the experimentation. In consequence, the rector as a chairman of the committee, sent a letter asking in a demanding tone 1) why hasn't anything happened? and 2) how are the departments going to use the flexibility offered to them?

Evidently, the request made by the rector was the first time to attack against the principles of the strategy of self-regulation inside the university: the steering group did not rely on the ability of the departments to use the flexibility offered to them. Simultaneously, the steering committee did not rely on the follow-up study, which was not able to produce visible results of the "good progress of the experimentation" as was expected. The problem is related to the study in the sense that concepts of reality were different between the researchers compared to those of the majority in the steering committee. Namely, this request for visible results can be related to quite an instrumental concept of reality where the invisible processes of change must be made visible. In that sense the problem is not that nothing happens in "reality", but the problem is what is "reality". We as researchers of the follow-up study, on the contrary, are interested in the (slow) processes taking place during the experimentation because of it or in spite of it. The answers of the faculties solved these conflicting views both by producing material for the follow-up study and by defending the experimentation and describing the "good results" of the experimentation.

When we analyze the answers given by the faculties we see, however, that all the faculties have defended the experimentation in a different way. Quite many of the answers have contradictory elements. The context in which these answers should be studied could be called as discourse of "the university administration". Thus all the faculties are carrying on a dialogue with the rector of the university, which has certain effects on the issues they are dealing with and the rhetoric they are using (on rhetoric, see e.g. Trevor Pinch 1990). In this context all the faculties must say that they have been able to use flexibility and, secondly they will use it to further develop their teaching and research. This is not a surprise, when we understand the context of the answers. If the faculties would admit that they have not been able to use the flexibility offered or if they had admitted that they have conservative departments where nothing new happens, it would have meant that they are also inefficient in their teaching and research. In other words, it would not have meant that they are doing an honest self-evaluation.

In this paper we have no intention to take part in this discourse. The aim is to analyze the phenomena found behind the sentences. We shall begin the descriptive analysis with the differences in the contents of the answers and concepts the faculties used. We assume, that the answers reflect the general attitudes of the faculty members, even though the expressions may vary according to persons.[14]

5.4. On the Contents and Concepts in the Answers

Faculty of mathematics and natural sciences: instrument for improvement

The faculty of sciences has compared the results of their departments with the aims and goals of the experimentation. The faculty has stated that teacher resources will be used for the good of the departments whether it is teaching, research, planning or administrative tasks. In their thinking the experiment has been used as an instrument for the departments and teachers to flexibly plan and evaluate their activity. In this thinking the experiment is seen as an instrument for improvement. In such cultural environment it is quite natural to see flexibility as a tool for allocating teacher resources. In the department of physics the professor has been freed from teaching for the implementation of the new cyclotron. At the department of chemistry the study for degrees has been unified to cut down the teaching load. In all the departments efforts have been made to employ more students for research projects. Naturally they have also tried to improve teaching mainly by concentrating on seminars and increasing tutorial teaching at the cost of the lectures given by teachers.

The faculty speaks mainly about the flexibility that can be used in planning the work of the teachers and departments. In this context it is also easy to see that free allocation of teaching resources is a precondition for the success of the future budgetary reform according to which the University will be given a lump sum of money instead of the regulated state budget with the appropriations strictly bound to the sub-items in the budget (Hölttä 1991). The Faculty of sciences is the only one among the faculties in the University of Jyväskylä to mention this precondition. It can be interpreted that the faculty has found the connection, because it uses this experiment for allocating its resources.

The faculty of mathematics and natural sciences consists of four large departments (biology, chemistry, mathematics, physics). The faculty is used to direct communication and face to face discussions. This mode of communication is parallel with the functioning of the research projects as teams. It seems evident that both the rational and cumulative structure of knowledge and cooperative working practices have created a functional scheme which aims at rational decisions and cooperation also at the faculty level (cf. Konttinen & Välimaa 1990a and 1990b). In a cultural milieu, which is so much based on cooperation, the experiment can be seen as an instrument for allocating resources.

Faculty of social sciences: criticism of the questions

The faculty of social sciences is interested in the motives and ideas behind the questions. After having criticized the motives for the questions the faculty does not actually give an answer to them. It does, however, give an analytical report on what has been done, what has been achieved and what the obstacles in the experiment are. As a conclusion the faculty states that the flexibility given by the experiment has been used in an appropriate way.

In the letter to the rector the faculty states that it sees the experimentation as a positive reform with no possibilities for returning back to previous practices. They also say that the experiment increased the cooperation between teachers and departments, it resulted in the reorganization of teaching at all levels, it promoted personal guidance for the students, it has activated innovation in teaching and, finally research is now more acceptable to all teachers.

The faculty is, in fact, writing a critical letter to the administration of the University. According to Becher's analysis on the ways of communication by social scientists, we have here an example on the way social scientists are used to communicating also with each other (Becher 1987).

The faculty of social sciences mentions flexibility in reallocating teaching resources during the experiment and by the experiment. It can be seen in the "administration discourse" what the faculty meant when it stated that as a condition for the success of the experiment the faculty assumed that the lack of its basic resources will be removed. In other words: don't expect better results if you don't give us more resources. This, in fact, is contradictory to the good results the faculty has already attained.

Faculty of humanities: more academic freedom

The most interesting point in the answer of the humanists is the following: "Freedom has been used in an appropriate way." For them the experiment has been used to increase academic freedom for research and to give the students more freedom as to their learning. The faculty of humanities does not in any way stress the increased flexibility in the allocation of resources. The flexibility is seen as an instrument for increasing the teachers' time on research. It could be interpreted that humanists are not particularly interested in what is happening during the experiment as long as "the administration" leaves them in peace and allows them to enjoy their academic freedom.

A reference to the "administrative discourse" is the statement by which the faculty does not accept the rector's assumption of lesser results in the experiment as a good basis for its answer. The faculty also stresses the fact that the nature of these assumptions is against the innovation strategy of the experiment. They also explain why they only have a few results since the start of the experiment: experimentation has had an effect on the quality, but not on the quantity of their activity. This makes it difficult to demonstrate the results in figures. They, nevertheless, claim that experimentation has increased the amount of tutorial teaching, which in turn has led to a 10 per cent increase in the number of MA-degrees taken at the faculty.

Faculty of education: blank form

The faculty of education raises two issues distinguishing it from all the other faculties. First, the faculty discusses the problem of 1600 hours. The reason for raising this issue comes from the Teacher Training College in the faculty: majority of the lecturers are not satisfied with the 'artificial limitations for their working time'. This is reflected in the letter of the faculty where it strongly criticizes the uselessness of the 1600 hours. The second issue is its description of the use of flexibility in the faculty. The faculty has not provided guidelines for the process of making teachers' work plans, which in turn has led to such freedom that the various departments have made their own forms for teachers work plans. No other faculty has even tried to make a form for using flexibility!

There are at least two dangers in this kind of steering the flexibility. It may increase the power of the office that prepares the form, and secondly, it may lead to the use of a coefficient to evaluate teachers' work in a just way. In fact, this is what has happened in some of the departments of the Teacher Training College. Both these procedures decrease the possibilities for using flexibility in teachers' work and allocating resources at the departmental level. In fact, the Teacher Training College made a decision a year ago which states that teachers should teach exactly as much as before the beginning of the experimentation. On the other hand the department of education has used flexibility and created a new project organization for teaching and research. Teaching is divided into four sections according to the disciplinary borders within the field of education. For example, the teachers of sociology of education plan and carry out their teaching as a team with one teacher responsible for each course.

The faculty of education is mainly concerned with the experimentation as a tool for planning the teaching given by the faculty. On this basis we are tempted to think of this as an evidence of an "educational" approach. Hence, the faculty is interested in planning its activities, and not in allocating resources.

In spite of the initial difficulties in getting the faculty interested in the experiment, they 'are sure that the experimentation has created new possibilities for developing both teaching and research'. This is why they are ready to go on with the experimentation.

Faculty of sport and health sciences: high expectations

The faculty of sport and health sciences has departments representing actually all the different disciplinary traditions. It has departments related to social sciences, education and experimental natural sciences such as biology. In this sense the faculty has most diversity in its disciplinary structure.

The faculty is not satisfied with the results attained during the experiment because of the high expectations they had for the experiment. The teachers of the faculty would have liked to increase the amount of research during the experiment. Because this has not been the case to an extent they had hoped, the conclusion is that the experiment has been somewhat of a disappointment. The reason for this inability to use flexibility as was hoped is mainly due to the heavy teaching load of the faculty.

The faculty considers the dismissal of the discrimination between seminars and lectures as the most positive result of the experiment. This has made several improvements in teaching possible and has created a more rational basis for the planning of teaching. Thus it has become possible to combine theory and practice in sensible ways, integrating courses to each other and increasing tutorial teaching. This is not, however, what the teachers had expected to achieve.

It was interesting to see that the word "flexibility" is not at all mentioned in the answer given to the rector. Accordingly the idea of using the experiment as a means of developing and improving work in the faculty seemed impossible because of the lack of resources. Thus the experiment is not seen as a means for allocating resources at the faculty of sport and health sciences.

6. Discussion

6.1. The Free Allocation of Teaching Resources-experiment as an Innovation

After having described the variety of approaches and use of the innovation, it is time to examine the experimentation as an innovation. Van Vught (1989, 259-268) has analyzed the characteristics of innovations in higher education. He has stated that Rogers and Shoemaker (1971) have listed five dimensions that affect the success or failure of an innovation. Of these positively related to its rate of adoption are its observability, the trialability and compatibility of the innovation as well as the relative advantage of the new idea. In contrast, the complexity of the innovation is not related to its rate of adoption. Later studies of the success of innovations have emphasized both its compatibility and its profitability (Levine 1980).

The present experiment fulfils all the conditions of the criteria presented by Rogers and Shoemaker that are positively related to its rate of adoption. The experiment is easily compatible in all different departments, all university teachers can benefit from it in their own work, the idea of the experiment is easy to try out and its separate results are easily observable. The complexity of the experiment is mainly linked to the fact that everybody must think by himself on how he could utilize the experiment in his own work.

6.2. Problems of "Traditional" Innovation Models

An example of the difficulties in explaining the functioning of an academic community in a "traditional" way is given here.

The Teacher Training Department functions in the Faculty of Education. A great number of lecturers (70), who have a strong sense of identity as teachers, works at this department. As stated above, the lecturers have found it difficult to approve the idea that they should only mark 1600 hours in their work plans, because they all work more. At the beginning of the experiment they thought that they should have been paid for all the hours of work that exceeded the 1600 hours. The university administration did not, however, agree to this, and consequently the matter was taken to national decision-making bodies from where it was returned unsolved back to the University of Jyväskylä. After these developments a decision was made at the Teacher Training Department that every teacher teaches exactly the same number of hours as before the experiment.

Seen in the framework presented by Rogers and Shoemaker (1971), the body of teachers was not able to benefit as individuals from flexibility, because the curriculum of the Teacher Training Department is very precisely and efficiently programmed and planned. Since it is not possible to change or loosen the curriculum, the department cannot benefit from flexibility. Thus the Free Allocation of Teaching Resources Experiment really appears to them as "fooling around and humbug". Furthermore, because teachers had no personal profit to be gained from the experiment, it was seen as a threat to the activity of the department (cf. Konttinen & Välimaa 1990b).

This kind of explanation is rational in itself. It does not, however, take into account the meaning the concept work has at the Teacher Training Department. In the department in question the teachers do not seem to approve of any colleague working less than the others. "Work" is understood in this cultural context mainly as teaching. What is also typical of the Teacher Training Department is its tightly tied curriculum. The teaching is closely tied to the curriculum, but surprisingly it is understood as gained profit: everyone sticks to his teaching load and is not willing to give up a single lesson. This way of thinking is possibly inherited from the teachers union and is rather common among the teachers in the primary and secondary schools. The innovation model introduced by Rogers and Shoemaker does not take into account this context of innovation. Thus the analysis picks out the elements of the innovation instead of giving attention to the context where the decisions are made. The decision to teach exactly as many lessons as before the experiment is understandable, when we see that the academic community is not able to give freedom to its members because of the fear that someone will have less "work" (teaching) than the others. To conclude, the tendency towards uniformity has influenced more to this decision than the inability to gain personally from flexibility through making the curriculum more flexible.

6.3. Faculties and Their Cultures

All the faculties have the same structure with elected deans and members of the faculty, but they act and express themselves in different ways. These differences are related to the elements of culture, "network of meanings". Because of these differences in activities it has been assumed that the faculties can be understood by analyzing their cultural differences. Empirically, the data and qualitative analysis presented in this study show that different ways of communicating and allocating resources vary according to faculties. Therefore, the decisive factors in the activities of faculties are not only the resources at their disposal but also the academic working culture of the faculty. To follow the tradition of empirical research, as an answer to the conceptual thesis presented at the beginning of the paper, we can state that the faculties can be treated as academic working communities with shared cultural backgrounds. However, this notion is a vicious circle: because of different cultures there are differences in activities, and because of different activities there are different cultures.

In fact, this is the question of "a chicken and an egg", which of them came first: operation or the idea for the operation? Instead of giving the exact answer to the question, we should reflect the relationship between cultural backgrounds and operations. The understanding of "reality" is connected to the handling and steering of "reality". In this way the cultural means of interpretation can provide intellectual tools for understanding the variety of the academic world instead of treating it as a monolithic entity. Furthermore, it can reveal the weaknesses of traditional ways of analyzing innovations as separated from the cultural milieu they try to change.

The focus of interests has, however, left some important aspects without attention. The issues brought up during the process of writing this article concern the differences of attitudes to change at the operating basic units, and the variety at processes of decision-making in the faculties. Remarkably, the models of Clark (1983) and Becher & Kogan (1991) do not take into serious consideration the level of the faculties. On the basis of Finnish experiences, the level of the faculties should be reconsidered: is their role changing especially during the strategy of self-regulation? There is also interesting tension between the democratic structures of administration and the collegial power of the academics. What kind of processes does it bring up?

These problems seem to require a different kind of qualitative approach to the subject. In this sense the present analysis has revealed also the weaknesses of this kind of descriptive analysis used in the qualitative part of our study. It relies too much on the written sources, which easily leads to description of meanings instead of search for meanings. This notion can be a fruitful next step on our way to the understanding and explanation of the use of an innovation in a university.

Notes

1. This study is intended to form a part of my dissertation concerning the limits and possibilities of the cultural approach in analyzing higher education. As the theme indicates, my critical aim is to analyze the problems and advantages of the cultural viewpoint in higher education research. This paper, however, concentrates mainly on presenting and analyzing the data collected during the experimentation of free allocation of teaching resources. Hence, the more profound analysis and critique of the cultural viewpoint will be the subject of forthcoming studies.

2. In defining the position of the researcher, as Bourdieu (1990, xi-xxvi) called it "to objectify the objectifying subject", we ought to note that experimentation is a hot topic in the negotiations between the Ministry of Education and the labour organizations. The other higher education institutions are interested in the results of the experimentation, too. For example, while writing this article I visited the Universities of Turku, Joensuu and Helsinki to report on the experimentation. Hence, at the national level all the information given of the experimentation outside the University of Jyväskylä (by researchers, or steering committee, or by individual teachers) can affect on the discussions on the usefulness, dangers and possibilities of the experimentation.

3. Raymond Williams (1982, 10-14) uses the term "signifying system" to distinguish the culture from 'informing spirit' as it is used typically in idealistic histories of art. Williams writes: ... "it sees culture as the signifying system through which necessarily (among other things) a social order is communicated, reproduced, experienced and explored" (1982, 13). Through this kind of use the culture is here comprehended both as a collective understanding and as intellectual instrument to explain the variety of phenomena. More about theoretical considerations and relevant literature see Tierney 1988.

4. The use of culture as a framework for explanation easily becomes classification of differences instead of a tool for understanding the differences (cf. Moses 1990).

5. The study on organizational cultures has been divided into two approaches according to the schools of anthropology. Organizations can be treated either as cultures (the "is" approach), or organizations can be understood as a characteristic of an organization. The latter is called the "has" approach. (Smircich 1983, 339-358, Aaltio-Marjosola 1991, 18).

6. Schein has analyzed organizational culture by dividing it into three levels: 1) Artifacts, which are the most visible level of the culture. They can be interpreted by understanding their symbolic nature; 2) values, "the sense of what 'ought' to be, as distinct from what is". Values can be seen in the form of social consensus; 3) basic underlying assumptions, which "have become so taken for granted that one finds little variation within cultural unit". In that sense basic assumptions are the preconscious level of understanding (Schein 1988, 13-21).

In a methodological sense the work of Schein is most useful and fruitful, because it gives clear models to analyze the aspects of group behaviour and develops intellectual tools for relating group behaviour into the organizations. This is maybe one of the reasons why Schein is treated a "classic" in the field of organizational culture (cf. Alvesson 1990).

7. The correspondence between these two sets of concepts could be described as follows:

Clark		Becher & Kogan
Superstructure	⟷	Central level
Middle structure	⟷	Institutions
Understructure	⟷	Basic units Individuals

8. When we use the terminology borrowed from Clark, it can be said that the *middle structure* is mediating between the logic of discipline and professional disorder of the *understructure* compared to the rationale of the upper levels which aims at "imposing order that will link together the otherwise fragmentary disciplines, enterprises, and sectors." (Clark 1983, 208). When we look at the *middle structure* of the universities they can be treated as organizations which are part of the higher education system (*superstructure*) (Clark 1983, 207).

9. Becher uses the concepts of the cognitive aspects developed by Biglan (1973) and Kolb (1981).

10. As a stimulating starting point for analyzing faculty cultures see Clark 1963.

11. In Finland faculties make decisions on teaching, research and hiring personnel for the departments. All the faculties have the same structure with elected deans and the faculty councils consisting of professors, members of lower teaching staff and students. In short, the faculties are administrative units with regulated means for making decisions, on the other hand they provide an arena for debate and discussion on research and teaching as well.

12. Frans A. Van Vught (1989) has used the concept 'strategy of self-regulation' to describe the change in the higher education policy that took place during the 80's in many European countries. The concept can be analyzed from different viewpoints: how do the researchers of higher education use it, in what ways can it be used in the discourse between the universities and the governments? The concept, strategy of self-regulation, is a useful tool for the researchers of higher education, and especially for those dealing with the higher education policy studies, because it helps to define the elements that separate the present liberal policy from the previous centrally planned and steered policy. At the same time the concept includes a normative aspect: the governments should increase autonomy to make the higher education institutions more effective! Because of the normative connotation the concept provides a tool for defending the autonomy of the universities in the debate on higher education at the state level.

The ideology behind the strategy of self-regulation is closely related to a liberal ideology with the assumptions of free citizens working most effectively for the benefit of their society and themselves, if they only have the freedom to do it (cf. Williams 1987).

13. The statistical analysis of the allocation of teaching resources has been presented in English in Konttinen & Välimaa 1990a and in Finnish in Konttinen & Välimaa 1990b.

14. The first version of the analysis from the answers of the faculties has been presented in English in Välimaa 1991a and in Finnish in Välimaa 1991b, see also Välimaa & Vuorinen 1991.

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Strategy and Implementation of Change in the University Management: The University of Joensuu, Finland

Seppo Hölttä

1. Introduction

The scope and structure of the current Finnish higher education system are a result of the period of intensive development since the late 1950's. The period was characterized by very rapid growth of both study places and resources but also by strict control of the Government. Since the mid 1980's the process of rapid decentralization of power and decision making has been going on. This development has provided the opportunity for Finnish universities to change their internal management systems. The recent changes in the University of Joensuu can be regarded as a response to the growing demand of public accountability and to increasing competitiveness of the Finnish higher education system.[1]

1.1. Decentralization of Resources - Centralization of Control

For two decades since the late 1960's, planning and development of the Finnish higher education system was based on the *Act on the Development of Higher Education 1967-86*. The main purpose of this law was to guarantee the growth of resources in higher education during the years of increasing social demand and rising enrollments. The policy proved to be very successful. Six universities were established during the Development Act in order to make the network of higher education institutions to cover the whole country. In less than thirty years the total enrolment rose from 23 500

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[1] This article is mainly based on the outline, which was prepared for the International Institute for Educational Planning of Unesco within the framework of the project **"Improving effectiveness of higher education institutions: studies of the management change"** by Seppo Hölttä and Kyösti Pulliainen. An earlier version of the outline, in which the management strategy is discussed in details, will be published in Higher Education Management (Seppo Hölttä and Kyösti Pulliainen: Management Change in Finnish Universities - Experiences of a Pilot University).

(1961) to 110 000 (1990), although the intake of first year students levelled down at the seventies.

The governmental strategy for the implementation of the regional decentralization as well as other extensive reforms (the degree system and internal administration) (Silius 1987) required very heavy centralized state authority and control of the Government. In fact, the control of the Ministry of Education over universities has until recently been stronger than in most western countries (Hölttä 1988).

1.2. Decentralization of Decision Making - Growth of Resources

Since 1987 the development of the Finnish higher education system has been based on a new law, the *Higher Education Development Act for 1987-96*, and on the *Decision of the Council of State* on the development of the system for 1988-1991. The Act includes the promise that by 1996 resources allocated to higher education will be raised annually by at least a sum equal to the rise in costs. The Decision guaranteed at least 15 per cent annual real increase of major appropriations to universities, excluding funds for salaries for permanenet posts.

In the Decision the Government requires that the new resources for higher education should be allocated mainly to improving conditions for research and postgraduate education and that the efficiency of performance should be increased. Furthermore, the Government required among other things

> - that the conditions for goal-oriented management in higher education be improved and the possibilities of institutions of higher education to independently decide on the use of funds allocated to them be increased,
>
> - that all institutions of higher education apply a system of performance evaluation producing sufficient and comparable data on the output and costs of research and teaching,
>
> - that in allocating new resources, the results achieved in research and teaching be taken into account, and the existing resources be redeployed according to changing needs.

An important consequence of the earlier developments in the Finnish higher education system was that the univerities had been forced to grow into relatively passive roles with respect to the Government. Although quite extensive financial and administrative autonomy is now offered to the universities, they have been quite weak in accepting new behavioral models and management methods.

1.3. The University of Joensuu

The University of Joensuu was established in 1969 in the wake of the policy for regional decentralization of higher education into one of the economically least developed regions in Finland. The academic faculty now numbers 400, and total staff about 900. The University has five faculties: Education, Arts, Science, Social Sciences and Forestry. Degrees are granted in 22 degree programs with 38 different academic study fields. Student enrolment is about 5000.

2. Problems of a Small and Young University in a Rapidly Changing Environment

The approach the State has adopted in the case of higher education is part of the general decentralization process in Finnish public administration following the development in most OECD countries. New forms of management and processes of dialogue between the central agencies and the individual public organizations are continuously sought in all sectors of public administration.

The Government has directed its attention to the output and efficiency of the universities. The institutions are confronted with growing demands for public accountability, and the process of decentralization of power and decision making is rapidly taking place within the system.

The new government strategy of higher education management possesses features of the *self regulation policy*, in which dialogue between the Ministry of Education and individual universities has a central role (van Vught 1989, Jäppinen 1989). Consequently, also the universities have been reassessing their internal administration, decision making, and the management strategies.

After the initial period of safe growth, a small and young university, like the University of Joensuu, found itself in a very different position. It was faced with the problem of how to respond to the new requirements of the Government and how to survive and be successful in a situation of rapid change in continuously increasing competition between institutions of higher education.

The University did not want to accept standard managerial models applied to other governmental organizations. Instead, the solution based on the special features of the academic organization and disciplinary values was sought. This is why the *Project for Improving the Managerial Effectiveness of the University* was established.

The project group, responsible for planning and implementation of the new management models, was established in summer 1989 for a period of one year. In 1990 its duties were passed to the central administration.

One of the corner stones of the project was international research results about the behavior of universities. The theoretical basis for the change process was found in the analysis of the higher education system (Clark 1983). The university is part of the matrix organization of the higher education system. The disciplinary communities are exceptionally independent; they are the sources of values and norms for academic work, and by self control. The institutional dimension of the higher education system (representing the State) will never be able to control academic work, and it should never try to do it. Even trying to do it might have unpredictable consequences to the academic activities.

The central question in developing new kind of management models is how the university administration and the new management methods would be able to support the academic activities most effectively. In practice, no other conclusion but internal decentralization of the university and strengthening the disciplines could be drawn from the theoretical analysis. But the project group also saw the problems in this kind of development. A too decentralized university may loose its identity as a university, and anarchic elements of the organizational life may emerge. Also a decentralized university requires leadership and certain goals, which are shared by disciplines and departments. Consequently, integrating elements have to be built into the new management system.

3. Elements of the Decentralized Management Strategy

In the University of Joensuu the major elements of the new management strategy coordinating the behavior of relatively independent basic units are the network and a continuous dialogue of the academic leaders (especially between the Rector and the Department Heads), block grant departmental budgets with minimized centralized control for the use of the funds, advanced information systems, and self evaluation of activities.

3.1. Dialogue and Leadership in University Management

Traditionally the Rector, Deans, and Department Heads have been quite weak in Finnish universities. This is mainly caused by the fact that they are elected from among their peers by their colleagues, other staff and students, and they hold their posts only for a few years. Also major decisions concerning for example resource allocation at each level of the organization have been made by the collegial councils. Much of the decision making has been delegated from councils to individual academic leaders in the University of Joensuu. Today the Rector allocates the funds directly to the departments after discussing with each of the Department Heads and Deans.

An important part of the new management strategy of the University of Joensuu is to create an active *network* of academic leaders. It has been assumed that a decentralized management strategy needs a mission statement and goals shared by all basic units. In fact, all academic leaders and the highest management have to be involved in the collectively accepted development policy and the goals, which have been negotiated with the Ministry of Education for the University as part of the budget process. It is assumed that the continuous dialogue among the academic leaders keeps the whole University informed about the pressures for the change coming from the disciplinary communities, and about how the requirements of the state authorities can be implemented in the academic organization without hurting the disciplinary values too much. The *dialogue* is an important element of the *self-regulation model* of the University. The department heads must transform the pressures and signals for change coming from the managerial line into disciplinary activities, and vice versa. The role of the central administration is to develop the processes of dialogue and to create the infrastructure for it, for example by developing information systems for the use of departmental management and facilities for the electronic communication.

3.2. Block Grant Budgeting

The University of Joensuu is one of two pilot institutions in the Finnish higher education system experimenting a new budgeting model (since 1991), which will be applied to the whole higher education system by 1995. The major features of budget process can be roughly described as follows:

The Ministry and the University negotiate the goals for the University for the planning period including the budget year. The University is provided with sufficient funds for reaching the goals. The University receives its appropriations as a *block grant*. After the budget year the results are compared with the goals. As far as the budget will include numerical goals, the existing national register and internal information systems will provide sufficient information for this assessment. It has not been decided yet in which degree the budget funds will be made to depend on reaching the goals, or will this be done at all (Hölttä 1990).

Inside the University no restrictions are imposed on the departmental funds, either. It is assumed that *lump sum departmental* budgets force the basic units to make *rational* decisions in resource allocation. The *fixed budget frame* is thought to be a powerful means of institutional management. It makes planning more concrete than before and forces the departments to assess the alternative uses of their funds. They cannot throw their (sometimes) unrealistic hopes to the University Senate or to the Faculty Councils any more. The departments and the department heads have to accept the responsibility for the use of the funds.

3.3. Advanced Information Systems

The strategic plan of information management at the University of Joensuu is based on an intensive study of the main processes in the university and on their relation to the university information systems. The main questions have been, how the present systems serve these processes and how the quality of services can be improved. The processing of information is viewed basically from the needs of academic departments.

An important new role of the central administration is to provide the disciplinary departments with advanced information systems, which support effectively the main processes (Pulliainen & Hölttä 1991). The University has the responsibility of strategic planning of the systems, but the information systems themselves are developed and designed in a private firm, the main owner of which is the Foundation of the University of Joensuu.

The core of university information systems consists of four *integrated systems*, which provide a solid infrastructure for the university management. *The Project Management System*, which is under construction, is aimed to improve the conditions for the departmental management. It will rationalize the process of departmental budgeting and the monitoring of the use of the budget monies. The other parts of the integrated system are the *Student System*, the *Teaching System*, and the *Premises Management System*.

3.4. Self Evaluation

One of the conclusions of the Project for Improving the Managerial Effectiveness was that developing evaluation should be simultaneously approached from the perspectives of *public accountability* and *organizational learning*. A university is a "bottom heavy" organization. In order to be effective, the initiative in educational innovations and in responses to external changes must originate from disciplinary departments. Evaluation of teaching and research should primarily be based on academic authority and on disciplinary expertise. Careful self evaluation would also serve the requirement of public accountability.

The University has been very cautious in developing indicators of effectiveness on the institutional dimension of the organization. The organizational and value analysis showed that simple numerical indicators applied to all basic units are felt to represent state authority and administrative control, which discourage departmental innovations. Numerical information about departmental costs and outcomes are needed in evaluation, but not as a control device. They are needed by departments themselves as part of the departmental management.

Organizational learning is emphasized in the evaluation but the evaluational component has also been incorporated into the system of resource allocation in order to create monetary incentives for the departments. The share of the budget funds allocated to the departments based on their performance has been retained small, and no numerical indicators have been used.

4. Implementation of the Change in University Management

The implementation process of the new management system has been a process of "learning by doing", although it has been based on a clear statement of the management strategy and on international research results.

The process of the implementation was started by extensive discussions in academic departments and faculties. The purpose of the discussions was to reveal departmental values and restrictions for the change, and to make the environment "softer" for the changes. These discussions made the project group convinced that differences in disciplinary values and cultures are so remarkable that it is hopeless to try to develop any comprehensive models for departmental decision making, evaluation, and planning. Instead, that kind of effort would have been regarded as centralized control in the basic units and would probably had made the situation worse.

Meetings of all department heads and the project group were held in order to encourage open discussion. One of the major problems in the beginning was that the faculty members were extremely suspicious about the motives of the project group and the central administration. Key persons were looked for in the departments. It was supposed that there are "opinion leaders" in each of them, and a few of them were very critical to the changes in the beginning. It took time to convince them about the advantages of the new management model, and not very much more than letting time go could be done. Today, there exists no major opposition and hardly any critical discussion on the topic in the University.

The project organization and normal administrative routines were merged during the implementation process. The University was chosen to experiment with new kind of budgeting since the beginning of 1991. It turned out to be the duty of the project staff to prepare the new budget request for the Government. This merging helped the new ideas of the project group to enter the main line administration.

Different devices were used to provide each member of the university organization with information on what was going on. The Campus News, local newspaper, and the internal network of electronic communication had central roles.

5. Key Issues in the Implementation of Change

The basic problem, which universities are probably always faced with in the managerial changes is caused by the matrix structure of the higher education system. The management system at the institutional dimension is never able to reach the subject matter of academic activities in disciplines or the work of professors. In the implementation of management changes it has to be accepted that disciplinary values always dominate the institutional ones in a university, and the implementation is successful only if the disciplinary communities regard the change and the new system legitime.

The organization of a university is complicated. The organizational analysis showed that information and difficulties in finding information on the relevant issues is a problem in the organization. Dialogue and advanced information systems are part of a solution to the information problem of the academic leaders, but providing each decision maker and with all relevant information is still a problem. More user friendly information systems and more training are needed.

The new management system in the University of Joensuu has been built on the assumption that the academic leaders at each level of the organization accept the role of manager of his or her unit and a role of a leader of a group of professionals in his or her department. However, of course, there are better and worse managers and leaders; individuals possess different personal characteristics and different abilities for those roles. No one is a professional in running a department or a faculty. The university has to live with the fact that Department Heads and Deans are amateurs in management issues.

Delegating decision making power to the departmental level of an academic organization cannot be made simply by loosening the centralized control. It is not easy to make the department heads to accept the power and responsibility of change, because their major reference groups are their own disciplines. Academics are heavily involved in competition for reputation and power inside their disciplines, but a real competition for power and influence at the institutional dimension of the academic organization may be almost completely nonexistent. From the perspective of a department a university is not much more than a collection of independent parts of disciplinary communities.

The most profound changes in the university management were organized as part of the Project for Improving the Managerial Effectiveness. Each one in the University of Joensuu had at least some idea of what was happening, and discussion about the strategies, goals and means concerning the management change was continuously going on inside the institution. However, the change process and the adaptation to the new management system - a new management culture - will probably take a few years. It is not too difficult to make changes of technical nature in a university, it is much more troublesome to keep the process of change going on for years, and to make changes, which really reach the behavior and the way of thinking of each faculty and staff member.

The University is now and in the nearest future faced with a problem of how to maintain the process of change, how to keep the key members of the University highly motivated, and how to encourage the departments and faculties to search their own models of internal management, for example decision making and self evaluation practices, which may be different in each disciplines. The important, but also problematic role of the central administration from now on will be to support the organizational learning processes in departments by many ways.

6. Conclusions

The response of the University of Joensuu to the changes in the relationship between the state and universities as well as to the changes in the social role of higher education is based on the strategy of decentralization. The approach to the implementation of the change is based on a careful analysis of the values in academic departments.

It is too early to evaluate, how successful the management strategy and the implementation process have been, and what is the impact of the decentralized management to learning and to the productivity of research. However, there are reasons to believe that the changes have been successful.

One of the major lessons learned at the University of Joensuu is that the solution to the management change problem has to be found by the university itself. The Rector and the highest management has to be highly involved in the process, and no external consultant is able to give a standard cooking-book model to any major change of a university. A process of change in a university may be impossible without a initiator with high formal status in the organization. Change in the university is a learning process, not a technical solution. External experts are needed to bring new ideas, but as important is the deep involvement of the highest management in the implementation of change. The project group has to be sensitive to the response from the basic units. The process of "learning by doing", which has been based on profound analysis of disciplinary values, commonly accepted strategy, and on careful discussions with faculty members at each stage of the change process have proved to be key factors for the success at the University of Joensuu. More important than paying attentions to goals and means is to pay attention to the self-regulation process of the change.

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PART III

ASSESSMENT FOR PRODUCTIVITY

From Central Planning to Decentralization? Accountability in Higher Education

Leena Koski

1. Introduction

Administration of Finnish universities has recently been reformed or there have been attempts to reform it mainly owing to the initiative of the state (Ministry of Education). Reforms have been explained by the need of decentralization so that productivity and efficiency at universities could be improved.

Administration at universities is, in many ways, problematic and includes both contradictions and paradoxes; administration is that sector of university activities where many problems in university development are legitimately projected. Administration is described as an institution which leads to "external" intervention in science and research, and increases bureaucracy and referendary power. Administration involves, however, activities that largely constitute both the formation of internal and external relationships of universities and the possibility of forming such relationships. This article outlines factors by which administration governs, modifies, and describes the tasks of universities now and in relation to the future. Special attention is paid to the significance of decentralization and delegation of decision-making as well as to management by results in the relationship between the state and the universities and to how these processes direct the internal activities of universities.

2. University Administration

University administration is not linked with narrative, mythical, and symbolic dimensions of traditional university (Bildungsuniversität) (cf. Koski 1990). The tasks of universities are to conduct scientific research and to give higher education. Universities carry out these tasks in the alleged context of education (Bildung), freedom, and criticism by educating the youth so that they will be capable of serving their country and mankind, as university statutes prescribe.

The task of university administration is to serve research and instruction, as it is often expressed. Administration implements this task by creating adequate conditions for research and instruction at universities: it controls financial and other resources, appointment processes, etc. Administration is bureaucratic hierarchy with subordinate levels of decision-making and with competence areas defined for each person, and its aim is to practice unconditional objectivity, equality, and equal treatment in each case and for each individual. In university administration, bureaucracy includes, in addition to these general aspects, certain oligarchical characteristics because different persons have different kind of decision-making power depending on their status and education. This oligarchy is linked with the adequate conditions of scientific activities and with the conditions set by the ultimate aim of scientific activities, i.e. to attain the truth. This is, in short, the tale that administration tells the world with its organization and activities (see Koski 1990, 35-62).

The structure of administration as well as the forms and ways of using power are also connected to what kind of activities are practised at universities and to what kind of social relationships determine these activities. Social reality is created by forms, narratives, and symbolic activities and organization, and administrative organization is a significant factor that determines social reality. The idea in the following examination of changes in administration is to show that these changes will also alter the social reality of traditional university activities (Bildungsuniversität).

3. Decentralization

In recent reforms of administration the starting point has been to dismantle the state-governed system of use of power and to move decision-making to where activities take place. In practice, this means that detailed budgetary control is transferred from the Ministry of Education to universities, earmarking of appropriations is dismantled, and - within the university - decision-making is shifted from central administration to faculties and departments - in other words, the emphasis in the organization of line administration is moved "downwards" in hierarchy. This well-established term reflects quite well the forms and subordination included in the hierarchy of administration.

The financial framework is determined by the state budget that is passed by Parliament every year and the size of university appropriations is based on the negotiations that universities carry on with the Ministry of Education. Thus, administrative decentralization does not mean that ministries would give up decision-making that enables them to control the financial resources of universities.

Another feature in administrative changes has been the shifting of decision-making power from collective bodies to individual managers (OPM (Ministry of Education) 1989). Measures to change management policies and division of power are linked with this. They are explained by the idea that the one who has power is also the one who should carry responsibility because if power and responsibility are vested in one person in each unit, the productivity of the unit is likely to be guaranteed. This is obviously based on the notion that it is possible for the individual to act in a responsible way only under personal threat (loss of face, loss of power, etc.). Another explanation for this could be that powerful leaders are necessary because responsibility has not (yet?) been internalized in such a way that it would work in every individual in every situation. Searching for a powerful leader and management skills emphasized in management training belong to the terminology of this university discourse:

> "The new administration culture will certainly need powerful and bold leaders. Although we are talking about universities, such leaders are not found without a determined effort. The attitudes of people must be changed and leaders must be trained." ('Helsingin sanomat' (newspaper) 12th August 1990)

Together with these changes (and tied to their implementation) universities will introduce a new way of assessing the activities, management by results. From the viewpoint of this new management culture, the means of internal exercise of power at universities have proved to be problematic for instance in Joensuu where there are ongoing experiments on management by results. The administrative bodies created in the 1970's are composed of elected representatives from various personnel groups according to a certain quota system. But when the goal is flexible, quick, and priority-based decision-making, it has proved to be necessary to restrict the number of those who participate in decision-making systems. A great amount of decision-makers will slow down decision-making and increase the number of different perspectives, which complicates both the decision-making process and the introduction of legitimation grounds that are necessary for productivity (cf. e.g. Lyotard 1985 and Luhmann 1969).

These changes also alter the internal preconditions of university activities. In the Finnish university system, linking results and resources together has been a strange idea: resources have been allocated equally or different units have been prioritized. The direct relationship between money and results is seen in the facts that activities are tied to productivity, and decision-making is linked with strong leadership, management by results, and decentralization of administration. The optimum relationship can be achieved through strong individual leadership that speeds up activities. This idea is also clearly linked with prevalent resource allocation to various direct needs (contract research etc.) and to changing priority areas within university activities and research.

The basic principles of administrative thinking can be presented as follows: (management)goal(money) → (management)money → result(management) → money(management) or as Rekilä (1990) puts it:

> "The new model of thinking in administration emphasizes management: it is called management by results. This concept seems rather unnatural in higher education. The idea is that the results are defined, the amount of money needed to achieve them is estimated, the money is allocated in a budget, the results are assessed and good results are rewarded."

It is interesting that various activities are described in the passive voice: "is called", "are defined", "is estimated", "are assessed". This can refer to any group and reveals one of the most significant problems in measuring management by results and accountability: who will assess if the results are "good" or "bad" and what criteria will be used in this assessment. The traditional, and also the new, features of university administration suggest that this assessment is carried out by the respective administrative management of the faculty → the university → the Ministry of Education, i.e. by the respective individual manager on the basis of accounting made by civil servants.

When the simultaneous delegation of executive and decision-making powers is implemented in the hierarchy (from ministries to universities, from university boards to faculty councils) and from collectives to managers (from university boards to the president, from faculty council to the dean), this does not mean that the centralization of administration is decreased but that the centralization is relocated. This accumulation of power is focused on those persons who control several sources of power (symbolic, status-based, scientific). This is nothing new in university administration but only a reorganized and relegitimatized form of it. What is new, however, is a more tight linkage with administrative discourses and forms. Rekilä (1990) describes administration and decision-making processes in future universities that will introduce management by results:

> "Real decision-making power is always used by the one who has the time and interest to study the questions in great detail. Thus, those who participate in administration as elected representatives will always have more limited opportunities to influence the decision compared with civil servants."

Management by results leads undoubtedly to increasing power for those civil servants specializing on administration. At the same time, administration reinforces the traditional oligarchical organization since the prerogative of the president / the dean (professors) - both symbolic and those connected to the form of administration - is included in management by results. The detailed allocation of resources is done by one person, for instance on the basis of the principles that have been determined in the faculty, but this person is not tied to these principles in any way when making his/her decisions since bodies that are higher in the bureaucratic hierarchy are not legally bound by decisions made by lower bodies.

Management by results means that the power of one person or a collective of two persons increases considerably - in practice these persons are the professor and the referendary civil servant. As "... it is possible to be punished if the duties connected to an office are neglected" (Tommila 1989) and as refusal to account for results, or bad or wrong results will lead to a deterioration of resources or even to total cutting-off of resources, no activity is justified as such but it must endure a constant legitimation process in order to guarantee its existence. This applies, however, only to the financial aspects of the activities since the symbolic, hierarchical, and oligarchical forms, organizations, and contents have been legitimatized in the foundations of management by results.

Decentralization of administration together with management by results emphasize the basic propositions that govern universities as administrative organizations: as a producer and implementor of governmental needs which is clearly contradictory to all the ideals of independance, criticism, and freedom that are ascribed to science, scientific instruction, and research. To put it simply, the state owns the universities and it can determine the resources for each university on the basis of a totally independent assessment. One example of this was the linking of the money allocated for renovating the University of Helsinki to the demand to rent the premises for the Conference on Security and Cooperation in Europe.

4. Accountability, Efficiency, Social Reality

In university discourse, the demand for measurable (desirable) results is directly linked with money and competition that is necessary to bring in money. Universities must produce results that can be measured and proved - results that will be the starting point for resource allocation so that productive units will be rewarded with increasing resources.

The attractiveness and fear associated with the demands for productivity seem to be connected with this competition and success achieved in it, with the expressed needs, and with the versatile rewarding of productivity. Prof. Wilenius' statements in an interview in 'Helsingin sanomat' newspaper illustrate this ('Helsingin sanomat' 22nd April 1990):

> "Successful tutoring has brought in clear cash to our small Department of Philosophy, thanks to the foolish efficiency measurements carried out by the Ministry of Education. It is quite comical. I was against efficiency measurements since the basic task of universities is to educate and that cannot be measured by credit points or degrees. During the last three-year period we were, however, the most efficient department at the University (of Jyväskylä) since there were eight post-graduate degrees per one professor. It brought in more money to the department, which, of course, is not a bad thing."

One of the central features in management by results seems to be a more explicit competition between departments - a competition where success brings in riches and fame, and loss poverty and shame. This embedded dread of shame - i.e. fear that opposition to management by results and measurement of productivity could be interpreted as uncertainty about one's own ability, a shadow of doubt in the eyes of colleagues - has obviously contributed to the gradual but clear positive change of attitudes on management by results and demands for efficiency.

One tendency that management by results emphasizes at universities is the fraudulence of each individual, in principle. Everybody is a potential thief and fraud. This is, of course, the general attitude of the state towards its private citizens and as state-owned implementors of administrative bureaucracy universities comply with this constant suspicion of fraudulence: everyone is a suspect until he/she is proven not guilty. This is a notion embedded in all bureaucratic systems (cf. Vartola 1980, 10-11).

In management by results the monitoring of individuals gets a new status and new instruments. In management by results, the activities (producing results) are seen from the viewpoint of the community whereas responsibility and guilt are more and more regarded as individual. The productivity of each department or project is assessed and the rewards for productivity are given to units. Thus, individual efforts are turned into collective efforts, indicators of the need of resources by the collective. If, according to the idea of management by results, the unit can decide whether it wants to take photocopies, create a professorship, etc. the issue of individual actions gets a completely new dimension.

When the use of appropriations is clearly placed in smaller units, this means a more detailed monitoring of the actions of individual employees. The advanced digital technology gives new possibilities for monitoring as it is possible to follow e.g. the amount of photocopies taken by each employee, telephone expenses (and the numbers called), etc. The guilt or innocence of each individual in relation to the goal can be explicitly proven and universities could become scenes for constant trial processes where the nature of each individual's punishment or acquittal is assessed by the relationship between results and goals and by good deeds. The traditional unity of universities (scientific communities) where resources are shared in common interest is eroded even symbolically when departments and individuals are made to compete against each other. The chief librarian at the University of Joensuu refers to this when she says that "...when decision-making power was transferred to departments, this meant that literature acquisitions became unstable, views on the usefulness of cross-disciplinary literature and literature acquisitions that would serve the whole community became blurred, and the departments held on to their own money". (Nurminen 1990)

The demand for results has always been present in the relationship between universities and the state (Koski 1990), but it is now linked with advanced computer systems with data banks and networks (cf. Lyotard 1985, 76-85). Measurement of productivity, the possibility and obligation to prove it, could not be done without computerized instruments. One of the rationales for the development of computer systems at universities is to improve and develop adminstration (for example Opetusministeriön työryhmien muistioita 1989, 2-4; also Joensuun yliopisto 1990, 13-14). But efficiency includes, at the same time, the binary logic that forms the basis of computer systems[1]: one and zero, efficient - inefficient, produces results - does not produce results, valuable - valueless. Knowledge, learning, in fact, anything, is, in this discourse, a merchandise that is the object of concrete battles. Let us just remember talks about the necessity of marketing various universities and about the creation of an image for each university the purpose of which is to buy in the brain capacity of the nation (and other civilized nations) which can be used as the raw material for producing results and sold out either with money or other symbolic values. This merchandise is produced in a department that is beginning to resemble Foucault's (1980) "panopticon" where everyone is under constant monitoring.

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[1] Serres (1989, 11), however, regards this as the basic logic of exact sciences, as the embodiment of reason in Western science: "...so those who love reason force themselves (no doubt out of religion) to paralyze everything in their thinking that is not certain, factual, and formal reason. They are the savages of this age, but they reign over the age."

5. Future?

In practice, measurement of productivity already forms the basis for decision-making, and decentralization and delegation of power have been implemented by statutes. When these phenomena are examined in the light of the characteristics that are tied to the form of administration - administration makes irrevocable decisions on right and wrong, good and bad that resemble the judicial power of courts (Koski 1990) - this means that the public interest of the state (and the fatherland and the nation) is determined as efficiency and quickness, substantial and measurable outcomes. Delegation of power to individual leaders means that the contents of productivity and results - i.e. what is efficient and in accordance with the public interest - are determined by a decreasing number of people.

When something is defined as good and right in social reality, some other thing(s) is/are always defined as bad and wrong, unsuitable and removable, as a disturbance, muddiness, noise (Serres 1982). In management by results, the social nature and the process by which some phenomena are excluded from "right and true" university (that implements management by results) change in relation to traditional "resultless" university (Bildungsuniversität). If the measurement of education, criticism, freedom, thinking skills, imagination, or any other aspect connected with traditional university (Bildungsuniversität) has been vague and if this has possibly enabled the existence of both unproductive departments and unproductive individuals (thinkers/dreamers, etc.), in a university with management by results this becomes impossible - they are seen as irrational, useless, unproductive, and opponents to constant growth.

It is interesting that no special rationales for the demands for efficiency, productivity, and measurement are presented. The demand for results is á priori necessary and desirable, measurement is reasonable, competition between departments and individuals prevents misuse of public funds, and rewarding the competitors with money is the only incentive of activities. The only rationale seems to be that the funds must be allocated to universities in some way - why not in a way that is objective and impartial, and treats every unit in the same way. Productivity (efficiency and quickness) must be guaranteed at universities because it is the public interest of the state (the fatherland) and it has been set as the goal in every sector of state administration. Efficiency - productivity - quickness constitute general social rationality which is associated with positive images; efficiency is pleasant, desirable, right, and reasonable (cf. for instance Nisbet 1980, 317-348) - because it is efficient.

Management by results has also at universities adopted the positive characteristics of efficiency, productivity, concrete results, and diligence and it promises constant growth, eternal guarantee that there will be no catastrophes. Management by results and efficiency have been named and classified among the things that produce increasing happiness; perhaps by the logic that Nietzsche (1989, 69-70) analyzes:

> "This has given me great trouble and still gives me great trouble: to realize that it is incredibly more important *how things are called* than what they are. The reputation, name and outlook, significance, normal dimensions and weight of the thing - which were mostly mistakes and arbitrariness to start with, are thrown like a net over the thing, but are strange to its being and even its surface - have gradually grown onto and inside the thing and transformed to its body through the belief of many generations; finally, the original outlook becomes almost always the essence and it *acts* like the essence!"

If one was to assess management by results and production of these results as well as centralization of administrative power, the assessment can really be based only on moral rationales, and this has become increasingly problematic in society. Management by results, accounting of outcomes, and tying this assessment to the growth of financial resources are connected, without exaggeration, to the same rationality, the instrumental reason whose signs can be seen for instance in dying forests and polluted ground waters. The question is what is the ultimate task of universities, science, and higher education and what this task should be: on the basis of this examination of some features of management by results, the university will be an institution that is committed to the reinforcement of the foundations of social, structural, and symbolic violence.

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Study Careers and Productivity

Pentti Määttä
Sakari Valkonen

1. Introduction

In Finland, like in many other European countries, the number of university students increased dramatically after World War II. On one hand, this led to a certain improvement in educational equality and, on the other hand, to a growing economic significance of higher education. At the peak of the expansion in the 1960's, a working party was set up to investigate the future of Finnish university education. Among other things the working party worried about the longer study time and the greater number of drop-outs in Finland compared with the United Kingdom (Tiede ja ylin opetus... 1965) which was regarded as the model country of the planning of university education. For example, there were equal numbers of graduates in proportion to the populations but apparently studying in Finland was less efficient as there were relatively 1.5 times as many students in Finland compared with the UK. That's why in reorganizing the studies, the aim of the working party became to shorten the time used for taking a Master's degree. It was on average 6 years but should not "appreciably" exceed 4 years. This was planned to be done so that the students "concentrate on their major subject more than now" according to the Anglo-Saxon model (pp. 38-39).

Thus, a clear developmental aim had been stated and concrete measures followed later on. The report of the Committee for the Reform of Degrees in Philosophy and Social Sciences (Filosofisten ja ... 1972) became the symbol - and source of controversy - of this development. One of the central propositions of this committee concerned the removal of the so-called Bachelor-level degrees[1] so that all the students would take the

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[1] Bachelor-level degrees in Finland corresponded roughly to the Anglo-Saxon B.A. degree. After a Bachelor-level degree, it was possible to enter the working life, for instance as a subject teacher in lower secondary schools, or in private companies, or in public administration. The Master's degree was required, however, for most public posts and, for instance, for working as a teacher in upper secondary schools, or for working as a psychologist. Also for post-graduate studies it was necessary to take the Master's degree first. Thus, it has been the proper academic basic degree - its closest equivalent could be the German degrees. Most students had the Master's degree as their goal from the beginning of their studies.

Master's degree. This was aimed to raise the standard of education. There were no Bachelor's degrees in some sectors of education but especially for the faculties of humanities and arts, natural sciences, economics, social sciences, and teacher training the proposition meant a radical change. Another significant proposition concerned the reorganization of studies into so-called study programmes even for these sectors of education. Traditionally, the student had been relatively free to choose the minor subjects required in the degree in these sectors; study programmes, on the other hand, would be preplanned entities that were to be profession-oriented, relevant to the working life.

The reform process of the degree system will not be dealt with in this article. It is essential to notice, however, that emphasis on the assumed economic significance of science led in Finland, as earlier in other countries, to increased societal concern with research and higher education in the sense that state authorities, outside the universities, started to direct or at least attempted to manage both research and teaching in a more conscious manner than earlier. Also, the above-mentioned reform propositions were passed even though part of the university community expressed a strong opposition towards them.

It probably is easier for the average student to build up his/her own study list as the degrees form entities (in contrast to the earlier system). In fact most of the students now conduct their studies within the study programmes although it is still possible to study according to individual "programmes". One result of this is a more binding commitment to the student community (especially to one's own subject area) (Aittola 1987). The structured study programme and the commitment to student community are likely to help the student to complete his/her studies, and probably in a shorter time than earlier (cf. Tinto 1982).

On the other hand, it must be remembered that the degree requirements have, in general, expanded which was not the aim of the reform. Savolainen (1989) showed this in detail in some subjects in the field of social sciences. Both the number of set books and the amount of instruction increased already in the beginning of the 1970's, i.e. before the formal implementation of the degree reform. In the 1980's, however, the degree requirements were reduced to some extent (e.g. Humanistit huomenna 1990).

The expansion of the degree requirements probably has an opposite effect on study duration compared with the increased cohesion of the study process. And, according to published statistics, the study time really seems to have lengthened, contrary to the expectations. E.g. in the field of humanities and arts the median study time rose from 7.3 years in the term 1972/3 to 7.7 years in 1978/9 and to 8.1 years in

1984/5 (Hermunen 1988). This has worried both the press (that shapes the opinion of the public) and the higher education administration (e.g. Numminen 1987). If, however, the amount of work demanded to pass the examinations has grown and if this growth has been scientifically justified, it is natural that the study time gets longer in spite of the fact that universities have, in recent years and decades, received more qualified students than earlier due to intense competition for study places.

2. Problems

Did we get what we wanted? Or is the decline of performance indicators, nevertheless, caused by students? Could it be that the matriculated students who gain admission to universities after an intense competition are lazier than earlier student generations? It is probably this kind of interpretation of statistics that emphasizes the "stimulation" of studies by means of economic sanctions. Especially the employers have, from time to time, expressed ideas of this kind (e.g. Koulutuksen ... 1990).

The available research-based information does not support such an interpretation. The weekly time that an average student spends on studying and other work is the same or even more than the normal working hours (e.g. Lairio 1980; Mali 1986). But for various reasons - not least because of the reduced financial aid for students - other work than studying has, in recent years, taken up a greater part of many students' total time budget (Lahtinen 1990).

The above topic will not be discussed in greater detail here. The progress of studies will be examined in this article only by studying the external characteristics of this progress, on the basis of various statistics. The most important data are the study and degree records collected by the Central Statistical Office, concerning the students who started their studies in 1975 and the ones who started in 1981. The former started their studies before the implementation of the degree reform, the latter after it. Possible changes in the wastage of starting places are illustrated by means of this data. As the available follow-up is not long enough for the 1981 student group, no reliable or final conclusions can be drawn on the development of study times due to the degree reform. Earlier developments can, however, be examined by means of some other statistics. Also the follow-up of the 1975 student group is sufficient to draw relatively reliable conclusions on real study times.

3. Changes in Degree Potential

The concept of degree potential refers to the student group which is about to take or has already taken their degrees at a certain time after starting their studies. In practice, however, it is more informative to examine the wastage of study places and its various forms.

Everything that leads to attrition of student numbers can be regarded as a wastage from the point of view of each educational unit or department: moving outside the university institution, change of discipline or study programme, and change of university. From the point of view of the entire university institution, however, only the first two factors are, in the following, regarded as wastage: a change of university which is not connected with a change of career does not apparently force the student to start his/her studies again from the very beginning. It is a matter of interpretation what kind of change in the individual student's study list is considered a change of career. This issue is, in the following, solved in a very practical way so that only the crossing of broad sectors of education is taken as a change of career. In this way, degree studies undertaken before the degree reform and studying in study programmes can, at least in some ways, be compared with each other.

Table 1 shows that the wastage of starting places has in some sectors clearly decreased, in some sectors it has increased, and in some there are no significant changes. As, according to Table 1, commitment to started studies would seem to have increased in most sectors of education, it can be concluded that a tighter organization of studies really does bind the student to his/her starting place more tightly than earlier.

But what about the exceptions? Wastage of students in education, physical education, and medicine have increased. These increases are, however, so slight that there are no grounds to make far-reaching interpretations. In these sectors, the degree reform did not bring about any major changes in the organization (programming) of studies, either, so there is no reason to expect noticeable changes in the commitment to studies.

Maybe the students who were recruited to natural sciences, technology, and dentistry in 1981 were weaker than those recruited in 1975? But such an assumption could be relevant only as regards technology as this was the only sector where the amount of students starting their studies was higher in 1981 than in 1975. It can be assumed that with a growing intake there will be more students who are "just trying out to see what it is like". This hypothesis could be supported by the fact that the

Table 1. *Drop-outs, change of career, and total wastage of starting places after five years of studying (% of the beginners).*

	Drop-out		**Change of career**		**Total**	
Sector of education and year	1975	1981	1975	1981	1975	1981
Psychology	13	9	21	4	34	13
Social sciences	13	11	11	9	24	19
Theology	16	11	6	6	22	18
Agricult. & forestry	5	3	4	1	8	4
Veterinary science	5	0	0	2	5	2
Law	5	2	0	1	5	3
Economics	9	9	5	2	13	11
Humanities and arts	21	19	7	8	28	27
Educational science	8	8	3	4	11	12
Physical education	20	22	3	3	23	24
Medicine	3	2	0	2	3	5
Natural sciences	15	15	20	25	35	40
Technology	5	9	4	5	9	14
Dentistry	1	5	2	6	3	11

growing wastage is mainly due to the increasing number of drop-outs, as shown in Table 1.

This is hardly the whole truth, however, even in the case of technology. Another explanation which supplements the recruitment theory is the development of the employment situation in a branch. During the latter part of the 1970's the employment situation for academic graduates grew weaker in Finland in general, but especially so in technology. This leads to a critical analysis of the rate of return of the studies and possibly, as a result of this analysis, to drop-outs (cf. Anckar 1985). The changes from one line to another within technology also clearly reflect the differences between the employment prospects of the various sectors (Table 2). Especially the mining industry has been threatened in Finland.

Table 2. *Student transfer between departments at the Helsinki University of Technology (% of the beginners who have moved to another department). Five-year follow-up.*

Department and year	1975	1981
Technical physics	12	6
Electrical engineering	3	2
Surveying technology	0	0
Architecture	0	0
Mechanical engineering	4	6
Chemical technology	3	5
Construction engineering	6	12
Wood processing technology	4	19
Mining	9	32

In natural sciences the growing wastage is, according to Table 1, completely caused by an increasing number of changes of the educational sector. According to Table 3, transfers from natural sciences to other sectors would seem to be connected with the amount of starting places in various educational sectors. Since the 1960's the faculties of natural sciences have, in Finland, increasingly served as some kind of preparatory units especially for medicine and technology. As the intake to natural sciences in 1981 was cut down compared with 1975 and as higher education as a whole did not expand, it can be assumed that there were relatively more students who had aimed primarily at other studies in 1981 compared with those who started in 1975.

This assumption is supported by the figures in Table 3 of changes in the student exchange between natural sciences and medicine. The intake to medicine is also cut down, and one result has been the increasing flow of students from natural sciences to medicine. Those who apply for admission to medicine are generally the elite of matriculated students when measured with their grades. Thus, it is easy for them to get a study place - in fact, a kind of preparatory place - in natural sciences. According to Table 3, the flow to "other" sectors also seems to have grown but as technical education has expanded, the flow from natural sciences to technology seems to be drying up.

Although dentistry is smaller in numbers than the above - and thus more sensitive to random variation - the increasing wastage can probably be mainly explained by the above circumstances, employment prospects, and changes in the allocation of resources

Table 3. *Transfers from natural sciences to other studies. Five-year follow-up.*

	Students who started in 1975		**Students who started in 1981**	
	Size of starting places	Numbers of transfers from natural sciences	Size of starting places	Numbers of transfers from natural sciences
Natural sciences	1938	-	1752	-
Medicine	464	104	372	116
Technology	1640	132	1843	79
Other	6307	143	6227	239
Total	10349	379	10194	434

to various sectors of education.[2]

Although the total wastage in the university institution has increased from roughly 19% in 1975 to roughly 20% in 1981, the development has been different in the various sectors of education and increases in the wastage are clearly connected with changes in the contextual milieu of higher education and its various sectors. Thus, it cannot be said that wastage has increased in general. In fact, if the wastage does not get higher than in the 1960's and 1970's (approx. 30%), the degree reform has considerably raised the standard of academic workforce.

4. Changes in the Duration of Studies

After the publishing of the above statistics perhaps even more concern has been aroused by the belief that the study time has lengthened. If this really is true and if the requirements have expanded, the authorities that designed the requirements are to be blamed, and not only the students. The belief in the longer duration of studies has, however, at least partly been based on misinterpreted statistics.

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[2] At the time of revision of the manuscript we, in fact, have a lively discussion - if not a quarrel - about which of the four departments of dentistry in the country should be closed in order to prevent the threat of unemployment.

The statistics really seem to indicate that the study times have grown longer. The degrees taken in the 1980's have generally taken a longer time to complete than degrees taken at the end of the 1970's / the beginning of the 1980's, and these, in turn, took a longer time to complete than degrees taken at the beginning of the 1970's. The statistical duration of studies is, however, dependent on variations in the number of students who start their studies. When the amount of starters increases, the proportion of those who take their degrees quickly also increases, among those who take a degree at a certain point of time. Then the average time to take a degree seems to get shorter. On the other hand, when the intake is cut down, the proportion of those who study more slowly to the ones who will take the degree increases and the time to take a degree seems to get longer. In neither of these cases are there perhaps any changes in the real duration of studies, as Davies (1988) has shown.

The growth of the number of new university students in Finland stopped at the end of the 1960's / the beginning of the 1970's. To the beginning of the 1980's the intake of students remained constant, approx. 11.000 students (cf. Table 3), if the incorporation of teacher education into universities is disregarded. In the mid-1980's the number of study places has again been increased, according to statistics. A major event of university politics in the 1970's was the reorganization of starting places between various sectors of education so that the starting places e.g. in technology more than doubled whereas the starting places in humanities and arts decreased by one third. The statistics will reflect these changes in the numbers of new students mainly as the lengthening of study time if other factors that influence the duration of studies have not changed.

Figure 1 shows that "Davies's rule" works e.g. in humanities and arts as well as in medicine. The number of new students was cut down in humanities and arts during the 1970's and the duration of studies **seems** to have increased. The number of study places in medicine was increased at the beginning of the 1970's and this **seems** to have been followed by shorter study times - and as the intake was stabilized, the duration of studies **seems** to be rising again.

But in technology the study times have grown, also according to Figure 1, in spite of the increasing number of new students in the 1970's. One cause of this could, of course, be growing recruitment of weakly motivated students, another cause could be increasing internal transfers within technology, the third cause the expansion of the degree requirements. The last factor is supported by the fact that degrees in technology have been stipulated to be more extensive than degrees in most other sectors of educa-

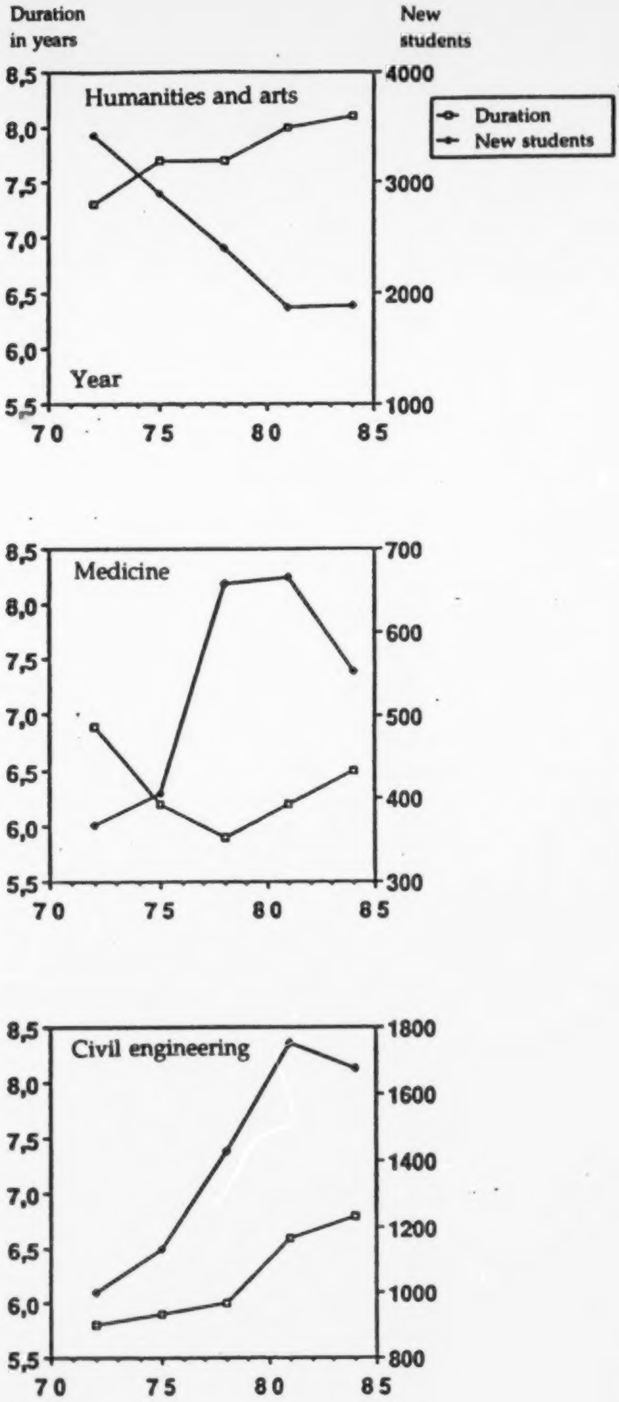

Figure 1. *Duration of studies leading to degrees in 1972/73 - 84/85 and the average number of students starting their studies 5-7 years earlier in some sectors of higher education.*

tion. The amount of work required to pass the courses also seems to exceed the credit points obtained for them (Hirvikallio 1988, cf. Sorvettula 1986).

In general, we, nevertheless, cannot conclude that the duration of studies has lengthened during the last few decades. On the other hand, the duration has obviously not been shortened to the ideal set by the working party mentioned above, i.e. to approx. 4 years. It must be remembered, though, that the statistics give the gross duration of studies leaving out the terms when the student has been absent or working elsewhere. The net duration of studies comes in fact fairly close to the target duration measured in study weeks and turned into full-time studying (see e.g. Opiskeluaikatoimikunnan mietintö 1988; Humanistit huomenna 1990). Furthermore, it must be noted that the academic year does not, in reality, reach the planned 40 study weeks (e.g. Panhelainen et al 1986).

5. Real Duration of Studies

Only the follow-up concerning the student group in 1975 covers a reasonably long time, 11.5 years, to allow us to draw conclusions on the real duration of studies at the end of the 1970's / the beginning of the 1980's.

As cross-sectional statistics can - on the above grounds - show both longer and shorter duration of studies than in reality, the results given by cohort follow-up can deviate both upwards or downwards or give about the same measure. On the basis of Table 4, the real study time is shorter, hardly ever longer, compared with cross-sectional statistics at the beginning of the 1980's (see Hermunen 1988). In addition to the elimination of the recruitment bias, this is also influenced by the fact that the calculations are more exact in Table 4, the duration of studies does not include earlier university studies contrary to cross-sectional statistics. All this shortens the median duration of studies to some extent in most sectors of education, in law studies even as much as 0.5 years.

The duration of studies presented in the table are real, however, only on two conditions: first, they include also the terms that the student was absent and second, the medians would grow as the follow-up time increases - but only slightly and only in humanities and arts, natural sciences, and social sciences. In other sectors of education the figures on the duration of studies can be regarded as final.

Table 4. *Estimates of real duration of studies by sectors of education. Students who started their studies in 1975.*

Sector, degree	Number of beginners	Degrees * (% of beginners)	Median duration of studies* (years)
Natural Sciences,			
Master	1 938	34.0	7.3
Bach.		17.0	5.8
Technology	1 640	76.4	6.5
Humanities and Arts,			
Master	1 639	28.7	7.5
Bach.		29.4	5.3
Economics, Master	1 337	30.7	5.8
Bach.		45.5	3.8
Education, Master	1 303	8.6	7.1
Bach.		77.1	2.8
Social Sciences	646	47.1	5.8
Medicine	464	94.2	5.8
Law	439	85.6	4.9
Agriculture & Forestry	284	82.0	6.3
Theology	197	66.0	5.8
Dentistry	196	95.9	4.7
Psychology	126	52.4	5.7
Physical Education,			
Master	98	32.7	6.2
Bach.		43.9	3.8
Veterinary Science	40	95.0	5.7

* Degrees taken by 31st Dec 1986

NB. In psychology and social sciences, Bachelor-level degrees have only slight professional relevance. Very few students end their studies at that level and it is not, therefore, meaningful to specify the level of degree in this context.

It is too early to say anything about the possible effects of the degree reform on the figures in Table 4, except that very quick studying in some sectors has become rare (Hermunen 1988). In some sectors, however, there cannot be seen any changes in this respect and in several sectors of education the changes started before the implementation of the degree reform. The decreasing trend of very quick studying may, on the other hand, be balanced by smaller variation in the study times (Mäkinen & Malin 1985).

One thing must be kept in mind when the students who started in 1981 have been able to study 11.5 years and comparisons are to be made with those who started in 1975, namely the following: the abolishment of Bachelor-level degrees changed the target of studies for some students. Although the Bachelor-level degree was also earlier regarded mainly as an intermediary degree, it remained for some students the final degree. The group that after the degree reform takes their Master's degree probably represents the starting group in a different way compared with those who took their Master's degree before the degree reform. Thus, we are then forced to compare, in a way, groups which cannot be compared.

6. Can the Progress of Studies Be Changed?

The progress of studies changes when the study process and/or its conditions are changed. The message conveyed in this article has been that the factors influencing the progress of studies are not limited to the study process - and the "quality" of the student intake.

In fact, the external conditions of studying may be more decisive with respect to the wastage than the internal organization of studies. External conditions, like financial security, also control the time spent on taking the degree. Working, for instance, is estimated to lengthen the duration of studies with one or two terms (Laukkanen 1988; Sorvettula 1986). The students are forced to work because of the small scholarships: therefore, getting money from parents, or if it is not possible, borrowing from banks and working cannot be avoided (Lahtinen 1990; cf. Böttcher et al. 1987).

Today, as a quarter of a century ago, models for developing Finnish universities are sought from abroad. Educational units are urged to improve their work by giving resources on the basis of results; the number of degrees is taken as an excellent measure (Hosia 1990). There is a need to urge students to efficient studies by rewarding quick studying (Opintotukityöryhmän muistio 1990). Both these measures are linked with well-known problems (see e.g. Astin 1985).

It has been shown in the above that the yield of various disciplines does not depend entirely on themselves. The same can be said about units within disciplines, although this will not be discussed in detail in this article; it might be advisable, however, to remember the student flows between various departments at the Helsinki University of Technology shown in Table 3. It is difficult to see that these "differences in starting levels" could be completely removed by e.g. developing the student selection. For this reason, among other things, no mechanical calculations in the assessment of results will hardly do justice to various educational sectors and units even if they were based on correct figures (cf. Management information... 1989).

Although the concern about the duration of studies has mostly been based on statistics that have been interpreted superficially, attempts to shorten the duration of studies are, of course, not misguided if it is otherwise justifiable to consider the duration of studies too long. It is not possible, however, to draw direct parallels to foreign points of reference, either (cf. Geipel 1990; Fries 1989; Teichler & Steube 1989).

If the duration of studies is a real problem, there could be many ways to solve it. The terms could be made longer and the credit points given for various study periods could be checked. From the student's point of view, however, the most central measures are pedagogical (e.g. Laukkanen 1988). It makes good PR, and it is, to some extent, effective to reward quick studying but it is not necessarily efficient economic policy as regards the overall target (Laukkanen 1985). Furthermore, it would obviously have negative effects on the equality of education.

As higher education financed by society involves, on the whole, a transfer of income from the poor to the rich - as a result of the different participation frequencies - rewards for quick studies would include an additional transfer. Papas and Psacharopoulos (1987), for instance, recommend the introduction of study fees (in Greece) - but only to the well-off so that the studying of students from poorer backgrounds could be supported financially.

In any case, to be efficient the measures should be directed to areas where there are problems. If there is a wish to decrease students' working - which in about half of the cases is necessary for livelihood, and not connected to studies in any way - student financial aid must be increased. Especially non-repayable aid based on means test should be increased as both the psychological readiness to take loans and the material ability to pay them back after studies varies for students with various backgrounds and study sectors (e.g. Le Grand 1982; Papas & Psacharopoulos 1987; Ala-Vähälä 1988). This applies to the situation where there is little to give.

But in the name of equality and efficiency the present Finnish cabinet (including the Centre Party and the Conservative Party) is raising the grant available to all students in the budget of 1992. As it will cover only about one half of the expenses some students, at least, are still forced to take loans or to work while studying. At the same time the cabinet is weakening the terms of study loans as demanded by banks. It remains to be seen what the real effects of this reform will be - on the progress of studies as well as on educational equality.

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Approaches and Assessment Models in University Teaching and Learning

Pentti Hakkarainen

1. Introduction

Problems in assessment play a central role in the attempts to develop the activities of universities. As departments introduce management by results and accountability, this increases the need of accurate assessment. The developers of the university institution realize, however, quite well that traditional approaches to assessment are insufficient in this new situation. Scientific creativity, criticism, and openness that are typical characteristics of the university institution are not easy to assess. On the other hand, they should be included in the assessment required by accountability.

Assessment that is linked with accountability is usually carried out so that the objectives set for the activities are, at the same time, criteria for assessment. The achieved results are compared with the objectives. Traditionally, it has been the ideal to be able to measure the results reliably and to compare them. If the measurement is impossible, the usual procedure is to turn to experts but then we encounter the problem of assessment criteria. Different persons can have very different criteria in their assessment and it is difficult to get a uniform picture of the assessment target.

Various procedures for qualitative assessment have been developed as alternatives to traditional measurement. They all introduced a subjective point of view to assessment - as in assessment made by experts. In the assessment of learning, the qualitative approach has meant that assessment is focused on the learning process or on learning to learn. In departments, qualitative assessment has been implemented as self-assessment, for instance, so that the departments have, at best, been able to define the assessment criteria themselves.

We can ask, however, what might be the new contribution of qualitative assessment to the development of university activities, and what new approaches to assessment could meet the new challenges best. The new challenges cannot be met just by decreasing the weaknesses of existing assessment methods. We need to develop the concept of assessment as well as assessment methods. In this work, the important questions are: what are the functions of assessment, how is assessment linked with other activities of universities, what is assessment focused on, and what are the instruments used in assessment.

We need to search for other criteria than the assessment method to define the concept of quality more exactly. In development work, it is meaningful to link the concept of quality with the concept of development, and use that as the criterion for quality. Thus, qualitative assessment should focus on development, and demonstrate that development has, in fact, taken place. This is not a very simple task. Assessment that aims at revealing development should take a stand on what is development and what is not development. We cannot define what is meant by development, however, without clear and accurate criteria for development.

Searching for the criteria for quality by means of the concept of development brings about other equally difficult but important problems. Qualitative assessment should be systematic so that it would be possible to determine indicators of quality. This means that we should deal with considerably larger entities than in traditional assessment of results. Assessment should focus on developing entities instead of separate results or changes. The subjects to be assessed must be examined through their internal relationships.

Taking developing entities as the unit for qualitative assessment means that it is very difficult to find one uniform criterion for quality or development. In different disciplines development and quality mean different things. This is clearly in contrast with simple and straightforward result thinking which aims at measuring all the results of various activities with the same criteria. It may be admitted that there are qualitative differences but, in practice, the same assessment criteria are used without taking the special character of disciplines into account.

When we search for criteria for quality by means of the concept of development, it highlights assessment methods in a different way than in tradional result assessment. In the development of assessment methods we have to consider how various methods could reveal development. Development easily eludes assessment methods if the aim is only to establish that development has taken place. In the assessment of development, the role of assessment must change in relation to the assessed activity. It is possible to assess development by generating development. If we wait for development passively or observe it from outside, it does not get a handle on the target of qualitative assessment. The traditional assessment methods are mainly used for passive observation and recording.

The challenge in developing qualitative assessment is to go beyond the subjective viewpoint that has been used as the criterion for quality. Self-assessment of activities or external assessment of the activity process do not, in any essential way, change traditional result assessment. Development and active generation of development may change the concept of qualitative assessment. In this article, we search for starting points for the development of such an alternative.

2. Need for Qualitative Assessment

It is possible to detect certain phases and emphases in the development of the assessment of teaching and learning. One problem in assessment that was recognized a long time ago is the effect of the teacher's subjective bias. The teacher may, unconsciously, let some secondary features have an effect on his/her assessment. Then, the teacher does not assess how much the student has learnt and how much the student knows, but the teacher's own likes and dislikes. "Objective" assessment methods and tests have been developed to eliminate subjectiveness and arbitrariness from assessment. These methods and tests tell about the student's knowledge on the basis of his/her task performance.

The "objectiveness" of assessment is based on certain assumptions and limitations that are perhaps not considered when tests or other assessment methods are used. "Objective" assessment is quantitative. In other words, the amount of learning or knowledge is indicated by means of numbers. The numbers are based on the amount of solved items in a test. The amount of knowledge is, in the simplest version, the same as the amount of correct items in a test. Knowledge that is measured by a test can be compared with the measurement of length and weight in physics, for example.

Quantitative assessment is well-established in the examination of learning outcomes. Quantitative assessment is used especially when the objectives for teaching and learning are defined by means of some concrete skills or knowledge. In this situation, quantitative assessment is used to see if the objectives have been attained. One way to define objectives, viz. the use of behavioral objectives, serves the need of quantitative measurement directly. An objective that is defined in detail can be taken almost directly as a test item which describes acceptable performance and performance conditions. On the basis of performance, students can be divided into those who have attained the objective and those who have not. Acceptable performance in larger entities, for example in a course, can be defined as a certain number of solved subobjectives or items.

One limitation of quantitative assessment methods is that they examine knowledge mechanically. The basic unit of knowledge is an item and items can be added to indicate knowledge of larger entities. This kind of basic unit for knowledge does not tell very much about the special characteristics of a learning process. Quantitative assessment is not interested in why some students did not manage to solve some items correctly. In addition, quantitative assessment gives only limited information on how knowledge and skills are formed into larger wholes. The cognitive process that precedes the solving of an item and the contribution of teaching in changes in thinking are not accessed in traditional quantitative assessment. Furthermore, it does not tell very much about transfer of learning from a given learning situation to other situations.

The reasons mentioned above have partly led the development of assessment of teaching and learning from the quantitative to the qualitative. How has the transition from traditional quantitative assessment to qualitative assessment been carried out? The transition has been implemented in various ways in various schools of thought. The simplest way is to continue using the methods of quantitative assessment, but start to talk about qualitative assessment. The aim is to make assessment more qualitative by means of more thorough and "exact" assessment data. It is thought that quantitative assessment becomes qualitative when better assessment methods are used and a more comprehensive picture of the student's knowledge is obtained. Assessment is still focused on the amount of the student's knowledge and skills.

There have been attempts to develop various qualitative assessment methods so that subjective methods are used instead of "objective" measurement. We have returned to traditional assessment of learning where an expert assessed the students' performance. The problems of expert assessment are clearly manifested in the assessment of artistic performance, for example, when the various experts represent different schools of thought. The same target can be assessed totally differently by different experts. They all agree, however, on the fact that the assessment is focused on the quality of the student's performance since the assessment does not describe the student's performance quantitatively.

Methods have been developed for qualitative assessment by means of which it is possible to get information on the student's learning process, thinking, motives for studying, etc. The methods developed for qualitative assessment try to bring out the student's viewpoint in teaching and learning situations. The target for assessment is not so much acquired knowledge and skills than the developing thinking and learning process as a whole. In many cases, the learning process must be assessed indirectly by means of the same performance indicators that quantitative assessment of learning outcomes uses. The difference between quantitative and qualitative assessment may be only that the same student performances are viewed, on one hand, as indicators of preceding learning processes, and, on the other hand, they are assessed quantitatively.

Characteristics of traditional quantitative and qualitative assessment can be described according to the following table, when the target, the purpose, and the data collection of the two ways of assessment are compared:

Table 1. *Basic differences between qualitative and quantitative assessment.*

ASSESSMENT METHOD		PURPOSE, TARGET, AND WAY OF COLLECTING ASSESSMENT DATA		
I	**Quantitative**	**What knowledge of the target is desired**	**How the data is collected**	**Purpose of the data**
1.	Measurement of learning outcomes -multiple choice test -completion items -essay	How many correct items, average task performance	Test task corresponding to objectives are drawn up, students answer the tasks	Student grouping and selection
2.	Measurement of interaction in instruction -interaction analysis -discourse analysis -cyclical chains	Structure of interaction between the teacher and the student	Observation + classification system	Planning and improving of the process
3.	Measurement of instructional material -content analysis	Amount of content units, contigencies	Classification system	Coverage of the material

II Qualitative	What knowledge of the target is desired	How the data is collected	Purpose of the data
1. Focus on learning outcomes and process -assessment of learning strategy /style -error analysis -analysis of perceptions and solutions	How the student analyzes texts, how the solution process works	By observation, asking, and analyzing the answers	Use of a better strategy, teaching how to solve problems
2. Focus on interaction in instruction -qualitative observation -retrospective analysis	Intentions, motives, problems, grounds for solution, cocnepts	Unstructured observation Repetition of the process, interview	Subjective viewpoint, student perceptions
3. Focus on instructional material -qualitative nature of analysis	Scientific criticism, the concepts, didactic structure	Source analysis of didactic contents	Enhancing scientific quality of contents, improvement of didactic quality

The common characteristic for both qualitative and quantitative assessment is that they both record events. Assessment records the amount of learning or the type of learning process, the structure of the interaction between the teacher and the student or concepts. It is not possible to draw any rigorous line between quantitative and qualitative assessment. It is often said that they complement each other. In fact, both quantitative and qualitative assessment are based on the same logic because both of them have classifying measurement as a starting point (Berka 1982). It is only the practical instruments of measurement that vary.

3. Recording Assessment and Measurement of Development

It is difficult for the basic philosophy underlying both quantitative and qualitative assessment to get a handle on development and change. They are both tied to the situation. Assessment aims, in most cases, at answering the question: Is the student able to solve this task or not? Conclusions on the student's ability and development are drawn on the basis of the combined total sum of several tasks. Also in qualitative assessment inference is context-bound: what is the student's strategy or style of learning when he/she studies a text? By combining and classifying several observations it is possible to infer what the student's strategy or style of learning is.

Vygotsky (1982) has described the problems in a similar research approach in psychology in the following way: "The first-mentioned method of psychological analysis could be called the division of complex psychological entities into elements. It could be compared to the chemical analysis of water which decomposes it into oxygen and hydrogen. The distinctive characteristic of this kind of method is that it results in products that are alien to the analyzed entity - elements which are not included in the entity, but which are new properties that never occur in the entity. A researcher who tries to solve the problem of language and thinking by dividing it into language and thinking separately, will end up in the same situation as a person who tries to explain a characteristic of water, for example its ability to extinguish fire, by decomposing it into oxygen and hydrogen. He will learn, to his surprise, that hydrogen burns and oxygen assists in burning, and nobody can explain the characteristics of the entity on the basis of these characteristics of the separate elements" (p. 15).

There have been attempts to construct a picture of development and change on the basis of measurement of learning outcomes and psychological testing in connection with teaching. Various change scores and indexes have been calculated on the basis of numerical results. But we constantly encounter the problem that Vygotsky brought up, viz. that we analyze elements instead of complex entities. There have been attempts to get rid of these problems by using analysis of development in the elaboration of measurement results.

Analysis of development uses the structure of the film as an analogy. When, in a film, the effect of motion is created by projecting the consecutive shots on the screen, in the analysis of development consecutive measurements are used to form a picture of change and of development on the basis of change. The analysis proceeds through hierarchical phases: (i) analysis of structure and function, (ii) analysis of consecutive phases, and (iii) analysis of transitions. The development of the examined phenomenon is described on the basis of the analysis of transitions, and it includes the first two phases (Siegel et al 1983).

In the analysis of development, change and development are kept apart. This is not possible if we just calculate change scores. The problem in the analysis of development is, however, how to define the distinctive characteristics of development. The current methods define the criteria for change in a totally formal way. For example Siegel et al (1983) use the following criteria for development: (i) the order of permanent change (x---y---z), if the order of events changes (e.g. y---x---z) it is not regarded as development any more, (ii) increasing differentiation of the whole, the components of the whole are clearly distinguishable, and (iii) hierarchical integration, the relationships between the components form a hierarchical system.

If the criteria for development are formal so that the same criteria can be used to examine any phenomenon, it is natural that transition and requirements on the analysis of changes are also equally formal. The following requirements concern the discovery of the mechanism of change:

(i) transition analysis should be based on sufficiently detailed and accurate follow-up so that the exact mechanism of change can be inferred from it,

(ii) transition analysis should reveal the mechanism behind change and it must (a) take into account the existing knowledge in an unambiguous way, and (b) give verifiable forecasts on behavioral changes,

(iii) theory that explains transition must take into account constant and even guided development.

When the attempt is to derive an explanation for development and to describe development on the basis of consecutive measurements or descriptions via transitional stages, the mechanism of change occupies the key position. The mechanism of change answers the question: why are there changes in the described phenomenon? When we talk about the assessment of development in connection with teaching and learning, we must try to find an explanation for the issue of what factors bring about a mental change and development of the student and how it happens. The analysis of development highlights two very important aspects: theory of development and mechanism of change. Both are, however, dealt with in a superficial and insufficient way. There is a logical error in the explanation of change by means of mechanisms that have been derived from the descriptions.

In the analysis of development, it is demanded that the mechanisms of change should be derived from the descriptions of developmental stages and the "constraints" for mechanisms to function should be described. This searching for the "constraints" can hardly improve the logical circle where we are moving: mechanisms are derived from descriptions of change, and then the mechanisms are used to explain the same changes. Furthermore, when we describe the connection between the process of change and its mechanisms in two stages, it gives the impression that the mechanisms of change, after they have been derived, are invariable and constant and cause the described transitions. The model describes the basic process of change which is influenced by change mechanisms, but after the mechanisms have been derived this influence works only in one direction.

Description of changes that have already taken place is not sufficient, as such, to predict development. An assessment model and analysis of development that are based on measurement do not transcend the limits of that which has already been described. Another type of assessment procedure and assessment model are to be used if we want to move from the description of changes that have already taken place to the assessment of the developmental potential. At the same time, we must shift from the description of changes to the active generation of them. This forces us to give new content to the concept of assessment and to perceive the role of assessment in teaching and development in a new way. The term 'developing assessment' is used for this kind of assessment (Hakkarainen 1982, 1983a and b).

The role of the evaluator in traditional assessment, either qualitative or quantitative, is to measure, observe, and detect changes. The evaluator tries to stay in the background in a learning situation and to collect his/her data without disturbing the learning process, according to traditional methodological instructions. Developing assessment thoroughly blurs the clear differences and boundaries between teaching, learning and assessment when it tries to reveal potentials by an active generation of changes.

4. Developing Assessment

In traditional assessment models it is considered meaningful to assess only what has been taught and learnt. Assessment reveals what tasks the students are able to solve and what tasks they cannot solve. In an assessment situation, the primary interest is not focused on the effect of teaching on learning. It is naturally assumed that the difference in knowledge before and after instruction is due to the influence of teaching. This before-after thinking is also often used as a direct indication of the student's development. Assessment and implementation of the student's developmental potential are, however, missing in this before-after model. The obtained and measured results do not reveal what the student would be able to do if he/she was placed in a different kind of learning situation and learning process.

When developing assessment is focused on activity potentials, the target of assessment is different from the traditional one. It is not possible to measure the target of developing assessment with traditional quantitative and qualitative assessment methods. Qualitative and quantitative assessment become feasible only when the potentials and possibilities have been realized in activities that can be measured. From the viewpoint of qualitative and quantitative assessment, the target of developing assessment simply does not exist as a whole. In developing assessment it is, of course, possible to use both qualitative and quantitative assessment to reveal some preconditions or consequences but this is done in relation to the developmental potentials.

When we want to assess developmental potentials and possibilities, it presupposes the use of other types of methods than quantitative or qualitative assessment of teaching and learning. The recording of a performance here and now does not tell very much about potentials. It is possible to forecast different possibilities and potentials on the basis of a specific historical analysis. Historical analysis should access the logic in the development of the examined target. It is possible to construct "the zone of proximal development" or "the social situation of development" on the basis of it (Vygotsky 1982). Possible areas for development and the criteria for developing assessment are outlined in the definition of the zone of proximal development.

The role and function of assessment change when the aim is to generate development and not just record the results of teaching and learning. Developing assessment is assessment and development at the same time. This leads us to the fact that the main method and instrument of developing assessment is teaching which reveals and implements the developmental potentials included in the target activities. Assessment by means of development and experimentation changes the role of assessment in the educational process. At the same time also the unit of assessment changes. Developmental effects must always be examined as larger wholes and not just as separate items of knowledge or skills.

Assessment of developmental effects and potentials expands the target and unit of assessment. Individual knowledge and learning must be related to the activities of a larger social subject. The unit of development consists of activity and not just of the sum of individual knowledge and skills. On the other hand, also learning should be examined as an activity that is social in nature. The expansion of the unit of analysis to the level of activity makes it possible to analyze the target of developing assessment on two levels: (i) learning as an activity in a learning situation and (ii) developmental effects of learning on some other activity (for example on work). Traditional assessment of teaching and learning is often delimited to a given teaching situation and assessment is focused on some separate items of knowledge or skills.

In order to be able to assess developmental possibilities realistically we must try to generate something that does not exist yet. Because of this, teaching must take place in such conditions that generate new thinking and can change the target activities. One instrument in this could be "developing experiment" (Vygotsky 1982) or "developing instruction" (Davydov 1986). It is necessary to proceed by stages in the implementation of the experiment. Learning can be regarded as a precondition for the development of some other activity. Thus, in the first stage it is necessary to guarantee "learning to learn" which can generate new creative thinking. Only on the basis of that is it possible to develop other activities.

In practical development work these stages co-exist as the same process but in the planning of the experiment and instruction included in it, it is necessary to separate "learning to learn" and the development of other activities. On the other hand, it can be said that a certain kind of learning is required for the changing and developing of activities. Engeström (1987) used the term "learning by expanding" for this kind of learning that aims at a historical change of an activity. Learning that develops activities is naturally not limited to separate teaching and learning situations. The development of an activity requires constant reflexion and other learning actions even outside the separately organized learning situations. A certain kind of organized instructional intervention is, however, a method that enables to start, accelerate, and direct the development of an activity.

The characteristics of developing assessment can be described by using the same questions as in the comparison between quantitative and qualitative assessment, in the following way:

Table 2. *Characteristics of developing assessment*

Assessment target	What knowledge is collected	How is the data collected	Purpose, objective
Learning activity, learning to learn	Overall structure of learning activity, learning actions that are presupposed by theoretical thinking	Developing teaching, Genetic cycle of forming theoretical concepts	Theoretical relationship to reality (Understanding development)
Development of activity, Relationship of learning to the developed activity	Conflicts in development and their historical stages, Zone of Proximal Development	Historical analysis -history of target -history of theory -current empirical reality Developing experiment, instructional intervention	Discovery of the logic of development, Developmental effects and transitions

The target for developing assessment can be a learning activity and its relationship to some other type of activity or to reality. If assessment is focused only on a learning activity, we must ask in assessment what the relationship of learning is to control of reality in general because learning has always a target and content. Learning can also be seen as an instrument in the development of some other activity and then it is possible to delimit the zone of proximal development in this activity. It is also possible to outline the zone of proximal development in learning and then we can talk about learning to learn. Thus, even though we would delimit learning or its relationship to some other activity as our target, we always have to examine the historical change of the activity and the relationships between various types of activity.

It is possible to distinguish a certain kind of progression and special characteristics that are included in each stage of assessment in the above table. It is not possible to outline the zone of proximal development without the preceding historical analysis and analysis of the current empirical reality. Instructional intervention and developing experiment are focused on the generation of the zone of proximal development. Developing assessment is closely linked with the developmental cycle of an activity and forms an essential part in this cycle. Engeström (1987) has described the developmental cycle of an activity by means of the following figure:

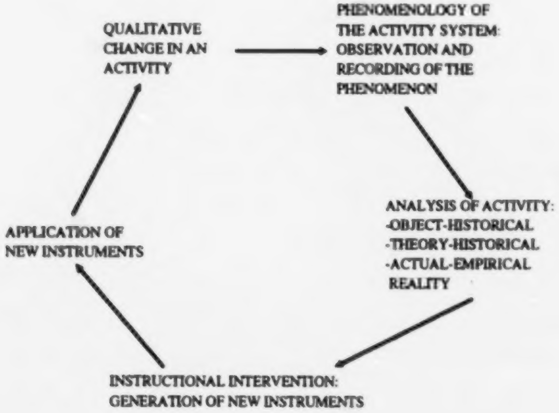
QUALITATIVE CHANGE IN AN ACTIVITY
PHENOMENOLOGY OF THE ACTIVITY SYSTEM: OBSERVATION AND RECORDING OF THE PHENOMENON
ANALYSIS OF ACTIVITY:
-OBJECT-HISTORICAL
-THEORY-HISTORICAL
-ACTUAL-EMPIRICAL REALITY
INSTRUCTIONAL INTERVENTION: GENERATION OF NEW INSTRUMENTS
APPLICATION OF NEW INSTRUMENTS

Figure 1. *The cycle of qualitative development of an activity*

The concept of qualitative assessment in the above model includes chronological stages and various concrete assessment methods. In traditional assessment, different methods are usually not combined in this way to form a whole. Historical, theoretical, and conceptual analysis usually form separate assessment areas. Assessment of learning outcomes or performances in general constitutes another area. Assessment and analysis of development form an area. Developing assessment combines all these separate assessment areas so that they become necessary parts of the whole. In this sense, the concept of developing assessment is a methodological paradigm of assessment.

5. Developing Assessment as an Assessment Method at Universities

Developing assessment of teaching and learning presupposes developing instruction. It is not possible to move directly from recording assessment to developing assessment. When we characterize developing assessment it is not, however, possible to remain only at the level of external, visible features. The criteria for developing instruction are found in the relationship between teaching and learning as well as its developmental effects. This means that knowledge or skills that have been taught in limited learning situations are not sufficient criteria for learning. In addition to these, we must examine the relationship between learning and reality as well as the role of learning in changes in other activities. In higher education it is possible to eliminate reality from so-called theoretical studies in a learning situation, and in various practical situations some narrow skills can be delimited as the target for learning.

The most central contents in developing instruction can be characterized in the following way:

(i) The generation process of genuine scientific concepts is taken as the target for the students' active learning.

It is customary also in higher education to teach and learn literature in the discipline. The function of examinations and control of learning can be just to record who have read the required literature and who have not. Little interest is shown on how the concepts presented in the material have been generated, how they are linked with other concepts, what kind of problems they try to answer, etc. Teaching and learning the research methods of one's own discipline have often been detached from the instruction of "theory". Developing instruction demands that we must get rid of the study of given definitions and concept descriptions, and - instead - learn the concepts actively. This requires that we have to search for the foundations of concepts, modify reality by means of thought experiments or realistically, model phenomena (Davydov 1972, 1986; Engeström 1987; Hakkarainen 1988). We need developing instruction for the guidance of this kind of learning process.

(ii) The logic of learning process is constructed so that it repeats the logic of research process in a subject area. Instruction aims at "research like" or "creative learning".

"Scientific research" in the study process have in various disciplines been linked with proper research and other practice in the discipline differently. Research that is required in studies can be part of a larger research project, it can be contract research to solve a practical problem, or a thesis where knowledge on research methods that has been acquired in literature is applied.

Limited parts of large research projects are not always the best solution for a thesis when we think of the learning process. A limited problem and its solution do not reveal the logic of the whole research process. A thesis that is based on the application of book knowledge can be constructed so that it proceeds freely according to the terms of learning, but the logic of the research process is often difficult to perceive on the basis of given methodology. Contract research teaches and forces to learn but it does not necessarily give a handle on the logic of research, either.

The functions of seminar work and other guided instruction are often seen as practical and the work is often concentrated on technical details. Methodological generalizations and justified scientific argumentation may be totally absent in guided teaching and learning. The aim is often to eliminate the "mistakes" in each thesis one by one. Seminar work can be a travesty of its ideal, the functioning of a genuine scientific community and its scientific dialogue and argumentation. In developing instruction, the aim is to generate methodological generalizations and to simulate the activities of a genuine scientific community in all teaching and learning (cf. Hakkarainen 1988).

(iii) The central issue in the planning of instruction is to guide the students' learning process so that the purpose would be to be able to make theoretical generalizations and to foster genuine scientific creativity (generating new knowledge).

In most cases university studies have been organized so that the demands of scientific creativity are encountered only in post-graduate studies. Studying is thought to include the acquisition of scientific knowledge, thinking, and methods, but not creativity. If the development of the students' scientific creativity is set as the objective, it is usually preceded by an acquisition phase. Developing instruction aims at theoretical generalizations and creation of new knowledge right from the beginning. For this, the instructional principles must be changed in the planning and implementation of teaching. Traditional instruction proceeds from the basics and the simplified to the complex and specialized. In developing instruction the aim is to arrive at theoretical generalizations and the mastery of the theoretical foundations of the discipline in as early a stage as possible (cf. Reshetova & Sergeyeva 1978, Sukhanov 1984, Salmina et al 1984).

(iv) In the planning and implementation of instruction, the starting point should be to secure content-related/intrinsic motivation and learning actions.

There are some features in higher education that guide learning in a certain direction. The use of credit points and study weeks as the indicators of performance, the system of examinations and degrees may encourage the development of instrumental motivation. Established teaching forms and practices may tie the teacher's hands in the searching for alternatives. Learning to learn and development of content-related/intrinsic motivation are not usually considered the tasks of university instruction. The control that is included in the various study programmes has been regarded as a sufficient means for motiving the students.

Learning to learn and the generation of content-related/intrinsic motivation that is required in creative, inquiring learning are defined as the tasks of developing instruction. Learning to learn requires the mastery of also other learning actions, like self-reflexion, setting of learning tasks independently, and modelling of phenomena. The objective is that students would be able to guide, assess, and direct the studies themselves. That is not always taught or learnt in education that precedes universities, and that is not always taught or learnt at universities, either. It is not possible, however, to reach the objective of scientific creativity without sufficiently high-level learning. Scientific creativity or scientific thinking cannot be assessed unless they are consciously strived at from basic education.

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